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Education and Economy: The Impact of Investment in Human Capital Through Education on Unemployment

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EDUCATION AND ECONOMY: THE IMPACT OF INVESTMENT IN HUMAN CAPITAL THROUGH EDUCATION ON UNEMPLOYMENT

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ABSTRACT

EDUCATION AND ECONOMY: THE IMPACT OF INVESTMENT IN HUMAN CAPITAL THROUGH EDUCATION ON UNEMPLOYMENT

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The impact of investment in human capital on economy has always been discussed in the literature. Existing studies in the literature generally focus on short term impacts of investment in human capital. While some studies see significant impact, some other ones see little or no impact. This study manipulated data that was cover a long span of time, a 25-year period. In this study the researcher inquired whether there is a significant correlation between education and economy in terms of the impacts of investment in human capital on unemployment over a long span of time. In this empirical study panel data regression analysis was used to examine to what extent variations in the dependent variable of interest could be explained by variations in the explanatory variables. Based on the last and the most complete specification-the specification with five-year lags and state and time fixed-effects- employed in this study education spending per pupil and health spending are the only variables that negatively affect unemployment. This result suggested that the only way to effectively reduce unemployment is investment in improving the quality of human capital through better education and health services.

I dedicate this dissertation to my wonderful family members. I particularly dedicate it to my wife, Emine, who has always supported and encouraged me with her endless patience and understanding and provided the best possible care for our children, Muzaffer Fatih and Murteza Emir, the true blessings and joys of our lives. I also dedicate this to my brother, Bunyamin Pirim, who has always motivated me to pursue my academic dreams.

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CHAPTER I

INTRODUCTION

Literature shows that not only scholars and researchers but also politicians and administrative practitioners address the impact of investment in human capital through education from various socio-economic perspectives. The reports submitted by the Organization for Economic Co-operation and Development (OECD) and the United Nations (UN) indicate that most government budgets show education spending to be one of the most dominant items in public expenditures (OECD, 2011; UN, 2011). Human Development Reports published by United Nations Development Program (UNDP, 2011) prove that education spending is a universal theme and most nations prioritize this issue with various motivations and incentives when dealing with their budget every fiscal year (UNDP, 2011). Education is always a priority for American administrations too, regardless of which political party the administration is affiliated. Both federal and state level politicians put education at the very top of their agendas before every election when addressing the public (Economic Report of the President [ERP], 2011).

John Dewey (1897) believed that caring about education is a community's paramount moral duty. Dewey states:

> I believe that the community's duty to education is, therefore, its paramount moral duty. By law and punishment, by social agitation and discussion, society can regulate and form itself in a more or less haphazard and chance way. But through education society can formulate its own purposes, can organize its own means and; resources, and thus shape itself with definiteness and; economy in the direction in which it wishes to move. (p.17)

A prominent political economist, Alfred Marshall (1920), the author of Principles of Economics, states:

> There is no extravagance more prejudicial to growth of national wealth than that wasteful negligence which allows genius that happens to be born of lowly parentage to expend itself in lowly work. No change would conduce so much to a rapid increase of material wealth as an improvement in our schools, and especially those of the middle grades, provided it be combined with an extensive system of scholarships, which will enable the clever son of a working man to rise gradually from school to school till he has the best theoretical and practical education which the age can give. (p. 176)

Education is not only a moral duty (as cited in Dewey, 1897, p. 17) but also a legal responsibility. Investment in human capital through education makes government involvement a necessity. Government involvement in the history of American education system also illustrates that education is not only considered a primary moral duty but also a legal obligation that ends up with policies applied and the laws enacted by authorities. Such a notion is sometimes revitalized by internal dynamics and sometimes by external dynamics. Internal dynamics refer to problems that show domestic characteristics such as poor quality schooling, segregation, and inequity in education settings. External dynamics refer to changes that take place due to outside developments. The Soviets' launch of the satellite Sputnik in 1957 would be a good example of external dynamics which was the impetus for the National Defense Education Act (Jolly, 2009). She sees the National Defense Education Act (NDEA) prompted by the launch of the Soviet

satellite Sputnik as a central example of the revitalization signs in the American education system aimed at building better, more equitable, and excellent education settings for those who have potential.

Motivations triggered by internal or external dynamics throughout the history of the American education system are long discussed in literature. There are thousands of books, journals, and journal articles addressing the issue of education from various perspectives and disciplines. The relationship between education and its outcomes is also a major theme. This study addressed the link between education and the economy. In particular it dealt with the impact of investment in human capital through education spending and states' fiscal effort on the fight against unemployment. The primary purpose of the study was to understand to what extent variation in unemployment rates could be explained by variation in investment in human capital through education. This study sought to evaluate the long-term effect of several measures of education expenditure and states' fiscal effort on unemployment rates, while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending.

Background and Context

There are several landmarks in the history of the American education system that shed light on how stakeholders in the system responded to internal and external dynamics. The need for an educated, highly skilled labor force and professionals has generally been the key driver behind investment in education so far (Ravitch, 1983; Berube, 1991; Owings & Kaplan, 2006). However, the early American economy did not need to invest considerable funding in human capital because there was not a significant

demand for highly skilled and qualified professionals and workers; rather the economy was in need of an unskilled or semi-skilled work force (Ravitch, 1983; Berube, 1991; Jackson, 1996; Hood, 2000; & Owings and Kaplan, 2006). Thus, investment in education was not priority agenda item for early American administrations particularly from economic growth perspective. However, federal government did not ignore the necessity of education completely. There has always been government involvement in education since the revolution in the 1700s. The "sixteenth section" of the Land Ordinance of 1785 is one of the earliest pieces of evidence of governmental involvement in education (Owings & Kaplan, 2006). The "sixteenth section" of the Land Ordinance of 1785 allocated federal funding for public schools under the supervision of the new states (p. 50). The Northwest Ordinance of 1787 was another sign that the federal government was interested promoting public education (Owings & Kaplan, 2006). They affirm that with the decentralization of government during the Andrew Jackson presidency, the government gave the states more authority and responsibility for education. Since then one can see that federal government's role in education shifted from traditional understanding of education to "...its own national survival needs" (Owings & Kaplan, 2006, p. 51). Establishing the U.S. Military Academy in 1802, the Naval Academy in 1845, the Coast Guard Academy in 1876, the Merchant Marine Academy in 1936, and United States Air Force Academy in 1954 showed the federal government's involvement in financing and promoting education "...to assure its own national security" (Owings & Kaplan, 2006, p. 51).

World War II was the milestone after which it became clear that the work of the American economy could no longer be carried out by an unskilled and semiskilled work

force; rather it was desperately in need of advanced technology that required highly educated professionals, scientists and qualified and highly skilled workers to compete with the outside world (Berube, 1991). There was another issue threatening the economy after the World War II. Following World War II, there were thousands of military servicemen returning to the civilian life who were going to flood the labor market looking for employment opportunities (Owings & Kaplan, 2006). There was a desperate need for a policy or act to take care of such a big economic problem. The GI Bill following World War II directed these young and dynamic individuals to education first by providing educational incentives and benefits (Owings & Kaplan, 2006). Thus, the economy was not flooded by these returning servicemen who would have been looking for employment opportunities. As these young servicemen chose the education route, the government had a chance to keep unemployment under control for a while (Owings & Kaplan, 2006).

The initial intention was not investment in human capital; rather it was keeping unemployment under control by promoting education for those who returned from the war to prevent a flood in the labor market (Owings & Kaplan, 2006). Even though the initial intention was not promoting education directly, the GI Bill ended up with significant investment in human capital as these returning servicemen completed their education and started making considerable contributions to the economy through their knowledge and skills (Owings & Kaplan, 2006). One can see that as the need for educated and highly skilled individuals became stronger, there was a paradigm shift in the understanding of investment in human capital because of its outstanding outcomes. This paradigm shift took a long time to come about. Dedicating an entire chapter in their book on investment in human capital, Owings and Kaplan (2006) affirm that it took the

contemporary concept of human capital 200 years to reach its present maturity.

External dynamics in the form of the Soviet launch of the satellite Sputnik on October 4, 1957 was another landmark that initiated one of the most challenging reforms of the American education system, the National Defense Education Act (US Department of Education, 2010). According to the United States Department of Education (USDE), the National Defense Education Act (NDEA) is the first example of comprehensive federal education legislation that was signed in 1958 to provide funding for all private and public education settings in the United States (USDE, 2010). The US Department of Education confirms:

> To help ensure that highly trained individuals would be available to help America compete with the Soviet Union in scientific and technical fields, the National Defense Education Act (NDEA) included support for loans to college students, the improvement of science, mathematics, and foreign language instruction in elementary and secondary schools, graduate fellowships, foreign language and area studies, and vocational-technical training (USDE, 2010, The Federal Role in Education, para.7).

Research Question

This study inquired whether there was a significant correlation between education and economy in terms of the impacts of investment in human capital on unemployment. In other words the major research question that was answered in this study is:

- Is there a significant correlation between education and economy in terms of the impacts of investment in human capital through education spending per pupil and states' fiscal effort on unemployment while accounting for

other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending?

The primary purpose of the study was to understand to what extent variation in unemployment rates could be explained by variation in investment in human capital through education. Therefore, this study sought to evaluate the long-term effect of several measures of education expenditure and states' fiscal effort on unemployment rates. All of the control variables are believed to be correlated with this study's dependent variable. This study showed to what extent these variables are correlated with unemployment rates and to what extent variation in unemployment rates can be predicted by variations in control variables.

Significance of the Study

Most studies show education spending has a positive impact on economy (Easterly & Rebelo, 1993; Levine & Renelt, 1992; Mankiw, Romer, & Weil, 1992; Sala-i Martin, 1997). Some studies, however, see little or no significant impact (as cited in Hanushek, 2004; and in Wolf, 2004). Much of literature also mentions that it is a challenging task to evaluate the impact and measure the outcomes because education is a long term investment that requires a long term commitment and patience to see the outcomes (Ventelou & Xavier, 2006; Hanushek & WoBmann, 2008; Hanushek, 2004). The analysis conducted by Eric Hanushek (2004) affirms that over a long period of time steady improvements in education without interruption could generate some significant increase in Gross Domestic Product.

Some studies affirm that the quality of governance is key to getting positive

outcomes from public spending (Rajkumar & Vinaya. 2008; Devarajan, Swaroop, & Zou, 1996; Pritchett, 1996; Kaufman, Kraay, & Mastruzzi, 2004). These studies affirm that service delivery, corruption, efficiency, efficacy of spending, political stability, democracy, rule of law etc. are some of the factors that determine the quality of the governance. Musgrave's concept of merit good looks at the impact of education through positive externalities (Musgrave, 1956; Eckee, 1998). The concept of merit goods is defined as "... commodities that the public sector provides free or cheaply because the government wishes to encourage their consumption" (Encyclopedia Britannica, 2011). Friedman, on the other hand, looks at the impact of education from the neighborhood effect perspective (Friedman, 1956). Both Musgrave's concept of merit good and Friedman's concept of neighborhood effect make evaluation and measurement of the impact of education even more difficult because of the unquantifiable characteristics of their approaches. One of the key issues that could be drawn from the literature is that the outcomes of education could more likely be achieved over a longer time span. Shindo (2010) found similar results when studying the impact of educational subsidies on human capital investment that yields economic growth in China. Unlike most studies conducted previously, the study conducted by Shindo (2010) considers longer life cycles to examine the relationship between educational subsidies and economic growth. Similarly, this study inquired whether there was a significant correlation between education and economy in terms of the relationship between investment in human capital and unemployment over a long time period. Thus, this study would help one understand to what extent the relationship between investment in human capital and unemployment was significant.

Another significance of this study was consideration the unobservable

characteristics such as general attitudes of the population to job loss and job search and the historical background of the states while studying the relationship between investment in human capital and unemployment through several observable characteristics that constitute control variables of this study . There are some unobservable characteristics that are ignored in most studies which weaken the effect of the research and threaten its validity and reliability. If not considered, these unobservable characteristics could prevent one from understanding the actual effect of an independent variable on dependent variable. Observable characteristics such as wealth, education, graduation rates, demographics and unemployment in particular have an impact on economy. But there are also some unobservable characteristics such as the attitude of the population to job loss and job search and the historical background which might have a statistically significant impact on the economy and unemployment. This study considered these unobservable characteristics as well while employing panel data regression analysis to find the actual effect of explanatory variables.

Research Design and Sample

This study employed panel data analysis to examine the relationship between unemployment and several determining factors in 50 states and Washington D.C. Washington D.C. was treated as a state for the purposes of this study. This analysis enabled explaining to what extent variation in the dependent variable could be explained by variations in the independent variables over time.

Data Collection and Sources

This study used existing secondary data that have already been published on reliable governmental and nongovernmental web sites such as U.S. Department of Education, National Center for Education Statistics, U.S. Census Bureau of Labor, and the Bureau of Labor Statistics.

Overview of the Study

Chapter 1 starts with an introduction that is followed by background and context to help one make connections between education and economy in terms of the impact of the investment in human capital through education. This chapter includes the research question, significance of the study, research design and sample, and data collection and sources. Chapter 2 includes the literature review that shows to what extent the studies in the literature are diversified from one another in terms of their understanding of the impact of education on the economy. Chapter 3 presents the methodology that includes the statement of the research problem, the research question, research design and sample, data collection and sources, method, and summary. Chapter 4 starts with a presentation of the results that includes an introduction, the results of regression analyses, and the summary of the findings. Finally, Chapter 5 includes a discussion of the findings as well as discussion of the limitations and suggestions for future research. This final chapter concludes with a summary of this research.

Definitions of Terms

Concept of Merit Good: Goods and services that are generally provided for free. Those who provide these goods or services do not expect any return; rather, they would encourage their consumption to improve the quality of life. Food stamps, WIC, free or inexpensive health services, subsidized housing and education are some of the examples that can be given to further understand the concept of merit good.

Concept of Neighborhood Effect: Introduced by Milton Friedman, the concept of neighborhood effect refers to the externality that is caused by an individual who do not have to agree or be aware of his or her action that causes cost or benefit to others. Pollution would be a good example of a negative externality, while immunization would be positive.

Cross Sectional Data Analysis: It helps researcher examine the relationship between dependent and independent variables at only one point in time.

Data Envelopment Analysis Method: It is a method that helps one distinguish the sources that are used not only for productive reasons but also for other reasons such as altruistic social services and policing.

Decentralization of Government: It is transformation of the responsibilities of federal governments to state or local governments.

Degree of Unionization: It refers to the states' policies against unionization. While union states require collective bargaining for educators, non-union states prohibit it. In some states collective bargaining is permissible.

Economics of Education: The concept of the economics of education does not deal with quantity only; but also does it deal with quality to improve efficiency and equity, and promote effective education reforms.

Economic Report of the President: It is a synopsis of the nation's economic progress submitted by the chairman of the Council of Economic Advisers annually to Congress every fiscal year.

External Dynamics: They refer to changes that take place due to outside developments. The Soviets' launch of the satellite Sputnik in 1957 would be a good example of external dynamics

Fiscal Effort: It is a degree of devotion and effort a society allocates its resources for education.

Fixed-Effects Estimation: Fixed-effects estimation is a preferred estimator in cases where the state-specific effects are likely to be correlated with the right-side variables.

Internal Dynamics: They refer to problems that show domestic characteristics such as

poor quality schooling, segregation, and inequity in education settings.

Invisible Hand of Free Market: Introduced by Adam Smith, invisible hand of free markets refers to an invisible instrument that regulates the nature of the market place. The market has a self-regulating nature that does need any outside intervention.

States' Unobservable Characteristics: The characteristics that cannot be quantified or measured. The unobservable characteristics such as general attitudes of the population to job loss and job search and the historical background of the states cannot be articulated in numeric values.

Panel Data Regression Analysis: It is used to examine the relationship between dependent and independent variables in multiple cross-sectional units over time.

Random-Effects Estimation: Random-effects estimation requires that the state-specific unobservable characteristics be uncorrelated to the vector of explanatory variables.

The Minimum Foundation Program: It is a method to calculate the cost to educate students, determine state and local funding contributions to each district, and provide for an equitable allocation of the funds provided by states and local districts.

CHAPTER 2

LITERATURE REVIEW

Introduction

The impact of public expenditures has been addressed in literature by scholars and researchers from various perspectives. Some scholars believe public expenditures unquestionably result in positive outcomes in theory, while some other scholars argue there is not always such a relationship in practice. From the writings of Adam Smith (1776) one can see that he confirms such a linear relationship between education spending and economic growth and argues that government expenditures in infrastructure, safety, security, justice, and education generate benefits not only for a certain group of people but also for the society as a whole. Smith states:

> The expense of defending the society, and that of supporting the dignity of the chief magistrate, are both laid out for the general benefit of the whole society. It is reasonable, therefore, that they should be defrayed by the general contribution of the whole society, all the different members contributing, as nearly as possible, in proportion to their respective abilities. (p. 767)

Musgrave's concept of merit good suggests that public expenditures such as education spending, welfare, and health spending could generate benefits for the whole society in the long term as positive externalities (Musgrave, 1956). In his study Eckee (1998) interprets Musgrave's concept of merit good from the perspective of positive externalities and sees education as partially a merit good by which all members of a society "...benefit from a literate and educated population" (p. 145). Friedman (1955)

addresses the role of education from the neighborhood effect perspective and asserts that the impact of education spending can be observed and justified by the neighborhood effects. He writes:

> In consequence, the gain from the education of a child accrues not only to the child or to his parents but to other members of the society; the education of my child contributes to other people's welfare by promoting a stable and democratic society. Yet it is not feasible to identify the particular individuals (or families) benefited or the money value of the benefit and so to charge for the services rendered. There is therefore a significant neighborhood effect. (p. 134)

Owings and Kaplan (2006) look at education from a holistic and a long term investment perspective and point out the outcomes from which the whole society benefits.

> Education is a significant investment in human capital that has clear benefits for the individual, the economy, and society at large. Increased levels of education result in higher incomes, increased taxes, increased participation in the arts, decreased social service costs, and decreased levels of childbirth complications. Instead of thinking of education as a cost to taxpayers, think of education as a long-term investment that pays significant dividends. (p.95)

Rajkumar and Vinaya (2008) see a positive impact of education spending only if there is efficient governance. Thus, they look at the impact of public spending from the governance perspective and refer to several studies that examine whether public spending

always generates positive outcomes. Based on the previous studies and the study conducted by Rajkumar and Vinaya (2008) better governance is considered one of the key factors to getting positive outcomes from public spending. In other words they affirm that public spending in nations that have a very corrupt and ineffective bureaucracy is less likely to have a positive outcome no matter what area the sources are allocated to and how much is spent (Rajkumar & Vinaya, 2008).

On the other hand Ventelou and Xavier (2006) and Hanushek and WoBmann (2008) recommend patience when evaluating the outcomes expected from education since some outcomes might appear in an unobservable form. It might take long time to observe the tangible outcomes of education spending. Ventelou & Xavier (2006) address the relationship between the role of education spending and economic growth through the Data Envelopment Analysis method (DEA) and assert that the effect of public spending on economic growth "... appears decisively higher when envelopment methods are used as a prerequisite for the econometrics" (p. 413). The Data Envelopment Analysis method distinguishes the sources that are used not only for productive reasons but also for other reasons such as altruistic social services and policing. In doing so, one can observe the positive outputs that cannot be observed in short term. Thus, Ventelou and Xavier (2006) go further and point out the hidden benefits generated through public spending. Ventelou and Xavier (2006) state that the benefits generated through public spending are generally "...overlooked at the time of the evaluation" (p. 404).They conclude that short term inefficiency that is observed when examining the outcomes of public spending should not be misleading because social wellbeing that could potentially be created through public spending in the long run can modify the potential for macroeconomic growth (Ventelou

& Xavier, 2006). Hanushek and WoBmann (2008) look at the issue from productivity perspective and emphasize:

> First, education can increase the human capital inherent in the labor force, which increases labor productivity and thus transitional growth towards a higher equilibrium level of output...Second, education can increase the innovative capacity of the economy, and the new knowledge on new technologies, products and processes that promotes growth. (p.1)

From the writing of Hanushek and WoBmann (2008) one can see that investment in human capital through education promotes economic prosperity in the long run. Lochner (2010) addresses the impact of education from a socio-economic perspective by addressing the relationship between education and crime. He refers to an empirical fact stating that "...an increase in educational attainment significantly reduces subsequent violent and property crime yielding sizable social benefits." Owings and Kaplan (2006) affirm that investment in human capital is not cure per se; rather it is an act of prevention. They point out the same relationship between education and crime and affirm that educated people are less likely to commit crimes (Owings & Kaplan, 2006). A crime-free neighborhood is a social benefit often associated with economic growth as argued in the writing of Gaviria (2002) who writes:

> Corruption and crime substantially reduce sales growth and that the reported levels of corruption and bureaucratic interferences are positively correlated at the firm level. (p. 245)

The writing of Gaviria (2002) implies that less corruption and crime significantly increase sales growth that has a direct positive impact on economic growth. When

reviewing the literature on real estate companies, one can see that these companies start talking about safety issues first before their customers decide to buy homes. Carroll and Erkut (2009) look at the relationship between education and the economy from a similar socio-economic perspective and assert:

> We estimate the extent to which increased education results in increases in federal, state, and local tax revenues and in contributions to social support and insurance programs such as Social Security and Medicare reductions in public expenditures on social support and insurance programs reductions in public expenditures on incarceration—the costs of building and operating state prisons and county and municipal jails. (p.3)

The awareness of the link between education spending and its positive outcomes spurs governments to get involved in investment in education through federal funding and subsidies. This commitment shows how investment in education and economic growth are positively interrelated from a government perspective. Shindo (2010) writes about this relationship from a Chinese economy perspective and argues that government subsidies in education that support individual investment in human capital considerably promote rapid economic growth. He states:

> Because greater government subsidies in education induce individuals to invest in human capital, both regions achieve higher economic growth. Moreover, because of the large differences in productivity between the regions, the growth gap widens with evenly raised education subsidy rates. (p. 1061)

Glewwe and Hanan (2004) state that there is a reciprocal relationship between education and economic growth. In other words, education spending and economic growth reinforce one another. On one hand, investment in education could positively stimulate economic growth; on the other hand economic growth might create higher demand for education. Glewwe and Hanan (2004) report:

> First, it suggests that economic growth and human capital accumulation reinforce one another; that is, while education leads to growth, growth, in turn, raises the demand for education. Second, it indicates that any policy that makes a household wealthier will also lead it to educate its children more, thereby increasing wealth in the succeeding generation (p. 49).

Spring (2002) points out the link between education and economic growth and argues that not only the stakeholders, but also those without children in a school district should support educational investments because of its outcomes from which all parties benefit. He justifies his argument by pointing out the benefits such as economic growth, political stability, efficient use of labor, and reduction in crime (Spring, 2002). Hilber and Mayer (2009) look at the link between education and economic growth from a similar perspective and assert that not only the residents with children but also childless residents, too, benefit from investment in human capital through education because of the positive impact of education on property values. Lochner (2010) addresses the link between education and crime and brings attention to the benefits of education from a crime preventing perspective. Spring (2002) refers to Horace Mann's argument and affirms that if education spending increases the quality of skills and improves the capability of labor force every single individual would finally benefit from the outcomes

generated. Based on Mann's argument Spring (2002) affirms:

> The wealth of a community depends on low rate of crime and poverty, the fulfillment of political obligations by its citizens and the skills and knowledge of its workers. (p.61)

Schultz (2003) points out some variables that boost economic growth and notes that advancements in a population's child nutrition, adult health, and education are some of these variables that have significant impact on economic growth. Baldacci, Clements, Gupta and Cui (2008) address this issue from developing countries' perspective and assert that spending in education and health plays a significant role in achieving Millennium Development Goals (MDGs) that are approved by 189 member countries of the United Nations. When addressing Millennium Development Goals United Nations Secretary General Ban Ki-moon asserts:

> The Millennium Development Goals set time bound targets, by which progress in reducing income poverty, hunger, disease, lack of adequate shelter and exclusion — while promoting gender equality, health, education and environmental sustainability — can be measured. They also embody basic human rights — the rights of each person on the planet to health, education, shelter and security. The Goals are ambitious but feasible and, together with the comprehensive United Nations development agenda, set the course for the world's efforts to alleviate extreme poverty by 2015. (UN, 2011, Millennium Campaign, para.2)

Bazo and Moreno (2008) point out the indirect effect of investment in human capital through education on economic growth and assert that a highly educated labor

force "...enables higher returns to be extracted from investment in physical capital" (p. 1295). Among other items in the public overall expenditures, education spending is the one that can be justified by the social rate of return that shows the total value of all benefits received from the spending allocated to a certain area (Gupta, Verhoeven, & Tiongson, 2002). They point out the positive impact of public spending on education and health and affirm that public spending on education increases the rate of education attainment and public spending on health care reduces child and infant mortality rates (Gupta, Verhoeven, & Tiongson, 2002). They write:

> We have provided evidence supporting the proposition that increased public spending on education and health care matter for education attainment and health status, although definitive evidence for a causal relationship is lacking. The evidence is strongest for education. The relationship is weaker for health... If expenditure allocations for education and health care are to boost economic growth and promote the well-being of the poor, policy makers in many developing and transition economies need to pay greater attention to allocations within these sectors (p. 732).

Economics of Education

The concept of the economics of education helps one "...analyze both what determines or creates education and what impact education has on individuals and the societies and economies in which they live" (World Bank, 2011). An initiative started by the World Bank, the Economics of Education Group, can help one understand the concept of economics of education better. The economics of education group was established to understand:

> Opportunities for improved efficiency, equity, and quality of education and promote effective education reform processes; to help improve, among both World Bank staff and clients, knowledge of what drives education outcomes and results; to better understanding how to strengthen the links of education systems with the labor market; and to build and support a network of education economists and build bridges to all those who are interested in their work. (World Bank, 2011)

The remarks by the World Bank help one see that the concept of the economics of education does not deal with quantity only; rather it primarily deals with the quality that is believed to strengthen the link between education and economy (World Bank, 2011).

Funding Education and Economy

Funding public education has long been discussed in literature. Funding education is considered a long-term investment. Soares (2003) points out a "...notion that education is an investment of current resources for future returns which is a notion at the center of the human capital models" (p. 703). He refers to some studies showing that the motivation for funding education comes from the sense of altruism (Soares, 2003). However, he also refers to several studies that show almost all members of a society benefit from externalities created by investment in human capital through education even though the sense of altruism plays a significant role in motivation for education (2003). Similarly, Marlow (2000) also points out the positive impact of funding public education and affirms that "external benefits may explain why many citizens advocate a strong governmental presence in elementary and secondary education" (p. 90). Soares (2003) also states that funding education is a significant investment from economic growth

perspective in terms of employment opportunities in the long run. Funding of public education is directly linked to student achievement and this yields better economic outcomes in the long run. Blaug (1985), Psacharopoulos (1996), Barro (1997), Gylfason (2001), and Owings and Kaplan (2006) are among those who look at funding education from an economic outcomes perspective and believe investment in human capital through education has a long-term positive impact on economic growth.

Gylfason (2001) asserts that rapid economic growth requires better education that requires more spending and provision. He argues that efficient investment in human capital through education does not only stimulate economic growth per se, but also increases the efficiency of labor force (as cited in Barro, 1997), fosters democracy, creates better conditions for good governance, improves health, and enhances equality (as cited in Aghion, Caroli, & Garcia, 1999). According to the theory of human capital, the more individuals are educated, the higher performance they can achieve in executing the tasks they are assigned (Dimov & Sheppard, 2005). Thus, one can assume that the theory of human capital can be considered the major inspiration behind the demand for efficient education since higher quality human capital results in higher performance (Dimov & Sheppard, 2005). As higher quality human capital is the center of attention in economies, the link between education and the economy is taken into consideration and emphasized in the literature quite often (Gylfason, 2001; Psacharopoulos, 1996; Blaug, 1985).

The link between education and economy is widely taken into consideration by developed nations as those economies are in need of higher quality human capital. Research shows that nations with a strong sense of necessity for investment in human capital have better economic growth compared to those who do not have such a strong

urge even though these nations are wealthy and rich in natural resources (Gylfason, 2001). Gylfason points out some African nations that are rich in natural resources and asserts:

> Nations that are confident that their natural resources are their most important asset may inadvertently- and perhaps even deliberately - neglect the development of their human resources by devoting inadequate attention and expenditure to education. Their natural wealth may blind them to the need for educating their children. (p. 850)

Education and Unemployment

A very recent report submitted by the Bureau of Labor Statistics (BLS) examines unemployment from educational attainment perspective. The report shows that education is one of the key determinants for employment which is a crucial indicator for economic growth and prosperity in the long run (Bureau of Labor Statistics [BLS], 2011). The report submitted by BLS shows:

> Among the educational attainment categories, unemployment rates for youth not in school were in October 2010 highest for those without a high school diploma-27.7 percent for young men and 31.4 percent for young women. In contrast, the jobless rates for young male and female college graduates were 9.9 percent and 9.3 percent, respectively.
>
> (BLS, 2011)

One can see that the unemployment rate for young male and female college graduates is about 3 times lower than for those without a high school diploma (BLS, 2011). The BLS report (2011) also shows comparisons between those who are enrolled in

high school and those who are not and reports that "...the unemployment rate for recent high school graduates not enrolled in school was 33.4 percent, compared with 22.8 percent for recent graduates enrolled in college" (para. 7). Owings and Kaplan (2006) point out the same relationship between education and employment and assert that the more educated individuals are the less likely they will be unemployed. They examine the link between education and employment from a taxable earnings perspective and report that college graduates earn almost 2.5 times more than high school dropouts. In doing so, they pay "...more tax dollars to support government services" that would have a direct positive impact on the tax base and the economy (Owings and Kaplan, 2006, p. 98).

An analysis conducted by Hanushek (2004) for the Teaching Commission shows that steady improvements in education over a 20-year period could generate as much as a 4 percent increase in Gross Domestic Product. Hanushek (2004) also confirms that quality schooling which yields highly skilled professionals and labor force has a positive impact on GDP. He affirms:

> One standard deviation difference on test performance is related to one percent difference in annual growth rates of gross domestic product (GDP) per capita. (p. 10)

According to International Labor Organization (ILO) unemployment takes place when a person is without a job and he or she has actively searched for a job within the past four weeks (ILO, 2011). The BLS defines unemployment rate as the percentage of labor force that is unemployed. Losing a job does not result in the loss of income only, "...but also the loss of all of the non-pecuniary benefits typically associated with working" (Clarke, Knabe & Rätzel, 2010, p.52).

Economic disciplines differentiate from one another when approaching the issue of unemployment and the methods to handle it. Advocating laissez-faire, classical economists affirm that depressions and unemployment occur not because of economic dynamics driven by natural market forces; rather they occur because of some external shocks such wars, tax increases, poor growing seasons, etc. (McEachern, 1994). McEachern (1994) refers to the teachings of classical economists and states that natural market forces would bring economic dynamics to equilibrium and that would also take care of unemployment, too. Keynes (1936) developed a new approach on unemployment that states unemployment goes up when the dynamics of economies cannot provide jobs for those who want to work. In other words, as production goes down fewer workers are needed. Peet and Hartwick (1999) refer to the Marxist perspective that holds capitalism responsible for unemployment because it is "...a social form of development based on the extraction of surplus from workers" (p. 104). Karl Marx (1863) blames the nature and the dynamics of the capitalism for unemployment and argues capitalism exploits and overburdens workers while holding "...the rest as a reserve army of unemployed paupers" (p. 478). Most international organizations (International Labor Organization, International Monetary Fund, Organization for Economic Co-operation and Development, etc.,) acknowledge that unemployment is one of the main problems to afflict economies across the world. Both developing and developed nations face this chronic economic problem. An OECD report confirmed that the average of unemployment rate for the OECD nations is about 8.5% (OECD, 2011). Another report submitted by OECD indicated that there were 45.5 million people unemployed in August of 2010 in OECD nations (OECD, 2011).

In March 2011, the U.S. Bureau of Labor Statistics reported that unemployment dropped to 8.8 percent which is still high and above the OECD average (BLS, 2011). The U.S. Bureau of Labor Statistics shows that there was an average of 6.1 percent of unemployment over almost a thirty-year period until 2008 (BLS, 2011). One can see that unemployment in the United States was relatively stable until the great recession. As the great recession deepened the impact of the crisis on American economy strengthened as well. Table 1 shows that the unemployment rate increased from 4.6 percent in 2007 to 9.4 percent in 2010.

Table 1

Unemployment Rates (in percent)

Year	USA	Canada	Australia	Japan	France	Germany	Italy	UK
2000	4.0	6.1	6.3	4.4	8.5	7.8	10.2	5.5
2001	4.7	6.5	6.8	4.5	7.7	7.9	9.2	5.1
2002	5.8	7.0	6.4	4.9	7.9	8.6	8.7	5.2
2003	6.0	6.9	5.9	4.6	8.4	9.3	8.5	5.0
2004	5.5	6.4	5.4	4.2	8.8	10.3	8.1	4.8
2005	5.1	6.0	5.0	3.8	8.8	11.2	7.8	4.9
2006	4.6	5.5	4.8	3.6	8.7	10.4	6.9	5.5
2007	4.6	5.3	4.4	3.6	7.9	8.7	6.2	5.4
2008	5.8	5.3	4.2	3.7	7.4	7.5	6.8	5.7
2009	9.3	7.3	5.6	4.8	9.1	7.8	7.9	7.0
2010	9.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: United States Department of Labor: Bureau of Labor Statistics

The causes of unemployment have widely been discussed in the literature. When addressing the components of aggregate unemployment, Podgursky (1984) refers to cyclical unemployment and noncyclical unemployment. Fluctuations in aggregate demand cause cyclical unemployment that is generally dropped in the course of economic

growth (Podgursky, 1984). Noncyclical unemployment; however, is considered more persistent even in the course of economic growth (Podgursky, 1984). He asserts:

> There are two major sources of noncyclical unemployment. The first is frictional unemployment, which is of a transitory nature and results from voluntary job turnover and mobility into and out of labor markets. Of more concern from a policy viewpoint is structural unemployment, which arises from more fundamental skill or locational mismatches between supply and demand in the labor market, and is associated with prolonged periods of unemployment, subemployment, and withdrawal from the labor force. (p. 19)

Economy Watch (2011) shows the reasons for unemployment as follow:

> Rapid changes in technology; recessions; inflation; disability; undulating business cycles; changes in tastes as well as alterations in the climatic conditions; attitude towards employers; willingness to work; perception of employees; employee values; discriminating factors in the place of work ; ability to look for employment. (Economy Watch, 2011)

Lee and Chang (2008) refer to a natural rate of unemployment that exists in an economy. They, however, affirm that such a natural rate of unemployment has no impact on inflation. They also refer to cyclical fluctuations (as cited in Podgursky, 1982, p. 19) that cause permanent effects on the level of unemployment due to labor market restrictions (Lee & Chang, 2008). This study did not go into details about the causes of unemployment; rather it addressed to what extent investment in human capital through education could help reduce unemployment. The ways to fight unemployment are

extensively discussed in existing literature and by practitioners who are in charge of economies of their nations. The disciplines mentioned above have their own ways of handling unemployment.

Marxists argue that the only way to get rid of economic problems would be by getting rid of the instruments created by capitalism as a whole and adopting a socialist or communist economic system that would eradicate unemployment permanently (Marx, 1863). Classical economists reject the concept of government policies and interventions that are used as instruments to combat economic problems such as unemployment. Rather, they refer to Adam Smith's concept of the invisible hand of free markets that would offset the market and cure the economic problems like unemployment (McEachern, 1994). The invisible hand of free markets refers to an instrument that regulates the nature of the market place that requires no outside intervention (1994). Unlike Classical economists Keynesians support the idea of government intervention which is a necessity when dealing with economic depressions (Brown, Lee, Daniel, & Thomasson, 1995). Keynesian understanding of economic issues seems to be more compatible with the idea of government spending to stimulate the economy and solve economic problems. Although harshly criticized by liberals and free market economists, Bowman (2009) affirms that Keynes' Economic Theories are re-emerging in government intervention policies. Bowman asserts:

> After inheriting one of the worst financial climates in decades, President Barack Obama pressured Congress to quickly pass a sweeping $787 billion economic stimulus bill. The American Recovery and Reinvestment Act gives state governments billions to pay for services like

> infrastructure rebuilding and other programs, increases unemployment insurance and cuts taxes for many Americans. (Bowman, 2009, para. 7)

Bowman refers to Dean Baker, co-director of the Center for Economic and Policy Research, who argues that, the strategies requiring government involvement to "...stimulate the economy through spending or tax cuts comes largely from Keynes' formalization of these ideas" (Bowman, 2009, para. 8). One can see that most current administrations enthusiastically embrace some Keynesian approaches and get involved through various policy instruments to solve unemployment issue.

An International Perspective on Education Spending

As previously stated, education is one of the biggest priorities for all almost all governments across the world. During elections, politicians use education spending as one of the most powerful tools to convince citizens to vote for them. The applications of the practitioners and literature show that during economic crisis the value of education is appreciated a lot more than that of during normal cycles. Because the value of education is greatly appreciated during recession some studies affirm that the recent economic crises did not have a significant negative impact on education budgets (Angelopoulos, Malley, & Philippopoulos, 2010). Rather, the administrations allocated higher portions to education budgets even during the economic recessions. Angelopoulos, Malley, and Philippopoulos (2010) assert that the administrations "...adopted big fiscal stimulus packages to mitigate the recession, and education has been a priority area in these packages" (p.1). They state:

> Indeed, in the US, public education spending is one of the strategic priorities of the new American administration, which has stated that it will

> focus spending on infrastructure, energy, education, health and support for the poor. In particular, the 2009 American Recovery and Reinvestment Act dedicated more than $100 billion for pre-school, K-12, and higher education. (p. 1)

AN OECD report, Education at a Glance 2010, shows that OECD countries invested in human capital through education significantly even though they were experiencing a global economic crisis (OECD, 2011). The report shows that below the post-secondary education level, education spending per pupil increased by 43% on average in OECD countries between 1995 and 2007 (OECD, 2010). The report states that education spending is 13.3% of the overall public expenditures in OECD countries. The report also affirms how closely education is associated with the economy particularly in terms employment. The report states:

> Education also plays a major role in helping to keep workers in the labor force longer – an advantage that is becoming a necessity as population ages in OECD countries. And it increases employability: On average across OECD countries since 1997, unemployment rates of those with tertiary-level attainment have stayed at or below 4% while for those with less than upper secondary education they have breached 10% several times. (p.2)

Table 2

Per pupil spending in OECD countries: Elementary and secondary education only

Country	Per pupil spending (in dollars)[1]	GDP per capita	Country	Per pupil spending (in dollars)[1]	GDP per capita
OECD avg.	$7,283	$31,703	OECD avg.	$7,283	$31,703
Australia	7,459	35,666	South Korea	6,089	23,083
Austria	9,910	35,259	Luxembourg[5]	15,440	75,754
Belgium	7,980	33,608	Mexico	2,072	13,332
Canada[2]	7,774	34,888	Netherlands	8,109	37,130
Czech Rep.	4,532	21,966	New Zealand	5,589	26,808
Denmark	9,270	34,871	Norway[6]	10,448	52,118
Finland	6,891	32,586	Poland[5]	3,568	14,842
France	7,712	31,055	Portugal	5,967	21,656
Germany	6,985	32,835	Slovakia[7]	3,032	18,020
Greece	---	26,701	Spain	7,016	29,520
Hungary[3]	4,188	18,030	Sweden	8,123	34,456
Iceland	8,877	35,096	Switzerland[8]	11,129	38,568
Ireland	7,318	41,803	Turkey[3,6]	1,286	12,074
Italy[4]	8,204	29,356	UK	8,306	34,137
Japan	7,661	32,040	US	10,267	43,839

[1] Per student expenditures are calculated based on public and private full-time-equivalent (FTE) enrollment figures and on current expenditures and capital outlays from both public and private sources, where data are available. [2] Data are for 2005. Postsecondary includes public academic institutions only. [3] Expenditures per student include public institutions only. [4] Elementary and secondary expenditures include public institutions only. [5] Luxembourg data are excluded from percentages because of anomalies with respect to their GDP per capita data. (Large revenues from international finance institutions distort the wealth of the population.) Expenditures include public institutions only. [6] Expenditures as a percentage of GDP include public institutions only. [7] Expenditures on tertiary vocational programs (ISCED 5B) included under elementary and secondary. [8] Expenditures per student and postsecondary expenditures as a percentage of GDP include public institutions only.

Source: Organization for Economic Cooperation and Development (OECD), Center for Educational Research and Innovation. (2009). Education at a Glance, 2009: OECD Indicators, tables B1.1a, B1.2, B2.1, and X2.1.

Data retrieved from the World Bank and the United Nations also indicate that most nations in the world allocate significant portions of their GDPs to education (World Bank, 2011; United Nations, 2011). Table 2 above shows the link between education spending per pupil and gross domestic product (GDP) in OECD nations. Table 2 indicates there is significant correlation between education spending per pupil and GDP. As GDP goes higher the education spending per pupil tends to go higher.

Education and Economy: Germany, Turkey, and South Korea

Here we examine the link between education and the economy from the perspectives of three OECD nations, Germany, Turkey, and South Korea. Germany as a leading European Union nation has a unique schooling system. A report submitted by Education, Audiovisual and Culture Executive Agency (EACEA) in 2010 confirms that most colleges in Germany are state funded (EACEA, 2010). One of the most serious socio-economic issues to affect the German economy is unemployment, particularly after the unification of the two states (EACEA, 2010). The report states that employers, unions, organizations such as charities, churches, political parties and trade unions play a crucial role in German education system (EACEA, 2010). The same report also shows a national awareness of the link between education and the economy particularly in terms of employment in German education system. The report affirms:

> In light of demographic changes in Germany, and with a view to the emerging need for skilled workers, great efforts must be made to develop the German education system in the years ahead. This is especially true of early-childhood education, school, vocational education and training and higher education. (p.24)

The Turkish education system shows some unique characteristics, too. A strategic planning report submitted to Turkish Grand National Assembly by the Ministry of Turkish National Education (MTNE) reveals that there is a total of 728,783 teachers and administrative staff and a total of 16, 500,000 students attending Turkish public schools (MTNE, 2010). With a budget of approximately $22 billion, holds about 11% of total budget, the Ministry of Turkish National Education comprises the largest share of the overall national budget (MTNE, 2010). The Turkish education ministry affirmed that the major motive behind allocating the largest share to public education was responding to the dynamics behind economic growth and the rapid changes in technology (MTNE, 2010).

The education system in South Korea shows how education and the economy are interconnected. The Korean education system is very unique with regard to its focused and outstanding achievement in some certain areas when compared to the education systems of the other nations (Kim & Bangran, 2004). They refer to an OECD study confirming "...the 15-year-old Korean students ranked first in problem-solving skills, second in reading, third in mathematics, and fourth in science among their counterparts from 41 countries" (p. 543). They affirm that education is considered the most powerful tool for economic growth particularly in terms of investment in human capital. Based on the data derived from Korean Ministry of Education and Human Resources Development they write that there are a total of 11,900,000 students attending about 20,000 schools with a total of 470,000 (2004) teachers and administrative staff in the Korean education system.

In search of a more efficient model to organize such a large institution, Kim and Bangran (2004) conducted a survey and found that Korean educational leaders would go with "... a market model, [that] would be the most likely picture of the future schooling since the society had been heading toward the neo-liberal market-oriented economy" (p.551). Their writing indicates that education that is driven by the dynamics of a neo-liberal market economy is expected to yield high-quality products by private sector since neoliberal market economy considerably prioritizes the role of the private sector in education and triggers competition for larger market share. They point out the lack of natural resources in Korea and assert that there is a tremendous enthusiasm in investing in human capital through education (p.544). Thus "...education is seen as an effective way to exploit this human resource" (p. 544). A review of the Korean education system by OECD reports that the Korean education system currently has shifted from quantity to quality to improve the connections between education and the labor market (OECD, 2009). The same report states:

> The current goals of the Korean government for tertiary education are largely related to economic development, including increasing the international competitiveness of tertiary education, improving the employment rates of graduates, increasing knowledge transfer between industry and academia, providing education that better prepares students for the demands of industry, and building 15 world-caliber research universities. (p. 19)

U.S. Federal Government Perspective on Education Spending

At the federal level of the United States government, the awareness of the relationship between education spending and economic growth can be seen vividly in the first Economic Report of the President (ERP) sent to Congress during the presidency of Harry Truman in 1947 after World War II (Federal Reserve Archival System for Economic Research, 2011). The Economic Report of the President submitted in 1947 states:

> A combination of public health, nutrition, education, and regional development programs would create additional job opportunities and supply workers fit to fill these jobs. (p. 29)

Following World War II the emphasis on education and the awareness about the link between education spending and economic growth kept growing. The Federal Reserve Archival System for Economic Research (FRASER) illustrates that the administrations cared not only about spending on education per se but also emphasized quality education that requires efficient spending in 1990s (FRASER, 2011). In other words the emphasis on the necessity of education spending shifted from quantity to quality. The Economic Report of the President transmitted to Congress in 1990 during the presidency of George H. W. Bush affirms:

> Increasing the skills of the Nation's work force-building human capital-requires improving the performance of the Nation's elementary and secondary schools. By international standards, U.S. outlays for education are high, but U.S. students regularly do less well than their peers abroad on tests of knowledge and achievement. The most pressing task, therefore,

> is not to invest more money in education, but to invest more effectively. (ERP, 1990, p. 27)

An entire chapter is dedicated to investing in education and training in the Economic Report of the President transmitted to Congress in 1996 during the presidency of Bill Clinton. The report affirms policies prioritizing education and training which significantly support economic growth and reduce income inequality among individuals (ERP, 1996). The Economic Report of the President transmitted to Congress in 2004 during the presidency of George W. Bush shows that the administration was well aware of the relationship between education spending and economic growth (ERP, 2004). The report states:

> The President's job for 21st century plan will support students and workers by improving high school education and strengthening post-secondary education and job training. (ERP, 2004, p.80)

During the presidency of George W. Bush, the No Child Left Behind Act (NCLB) was enacted. Most educational leaders, scholars, and academicians find this act a significant milestone in the history of the American education system because of federal government's strong involvement in the issue of equity in American public school system. In their work, the *Leadership for Equity and Excellence* Scheurich and Skrla (2003) address the equity issue and assert that the No Child Left Behind Act (NCLB) of 2001 is one the first significant steps taken in the history of U.S. education by the federal government to close "...achievements gaps between white children and children of color, between middle-class children and those from low income homes" (p. 134). Under NCLB the federal government holds schools and districts accountable to close the

achievement gaps between groups (Scheurich and Skrla, 2003). They assert that NCLB was enacted not only to close achievement gaps between these groups but also to promote the socio-economic prosperity of the nation as a whole. Scheurich and Skrla (2003) state that schools that are both equitable and excellent would definitely promote a nation's prosperity that is socially and economically successful. Finally, the very recent Economic Report of the President transmitted to Congress in 2011 during the presidency of Barack Obama directly points out the relationship between education and employment and states that the higher education an individual obtains the more likely he or she can get a job compared to uneducated counterparts (ERP, 2011). The report affirms:

> Next, because an increasing number of jobs require more than a high school diploma, higher education must be within reach of every American. So we've ended the taxpayer subsidies that went to banks to act as a middleman in the student loan process, and used the savings to make college affordable for millions of students. (p.5)

These remarks above are based on the data retrieved from the economic reports submitted Congress since 1947. The Economic Report of the President is submitted to Congress every fiscal year. It is a presentation of various issues that are believed to be significant to submit to Congress. Education is one of the issues mentioned in almost all the reports since 1947. The economics of education is also a very relevant issue in most reports since 1947. In this section, the study showed to what extent the concept of education and the economics of education are emphasized together in these reports for last 25 years. Table 3 shows how many times the word "education" is mentioned in the Economic Report of the President transmitted to Congress every year. This would help

one question to what extent the economy and education are associated in these reports. Each report that was submitted between 1986 and 2010 was reviewed and the total number of times the word "education" appears is counted. One can get a general picture from such a source and see to what extent education is prioritized or emphasized each time these reports were submitted. It could also help one understand to what extent economic dynamics and conjecture had an impact on the economic report to the president submitted to congress every fiscal year. Table 3 shows that last two years of George Bush's presidency and first two years of Clinton's presidency show a high rate of unemployment, an average of 6.9 percent. The third year of Clinton's presidency there is a rapid increase in the number of times the word "education" is mentioned in the reports submitted. In his fourth year the number of times the word "education" reached its peak. Among five presidents, President Barack Obama mentions "education" the most, an average of 163 times. President Obama allocated the highest percentage of the budget to pre-primary thru secondary education spending, an average of 3.77 percent. This coincides with the highest rate of unemployment, an average of 9.0 percent during his presidency when compared with the unemployment rate during the tenure of the previous four presidents of the United States. This could also illustrate domestic and global economic crises do not have a considerable negative impact on the necessity of the investment in human capital through education even though the economy goes through severe economic issues. Moreover, the most recent report submitted to by the Bureau of Labor Statistics (BLS) also supports the argument raised in this research.

A report submitted in March 2011 by the Bureau of Labor Statistics (BLS) shows unemployment dropped to 8.8 percent, the lowest in two years, and the economy added

216,000 new jobs (BLS, 2011). One can assume that President Obama will not make any considerable budget cuts to education spending since the outcomes are believed to help with the economic recovery in the long run.

Table 3

The number of times "education" as a word mentioned by year

President	Year	Total education spending in percent of GDP (elementary and secondary education only)	Unemployment	# of times "education" mentioned
R. Reagan	1986	3.43	7.00	27
R. Reagan	1987	3.48	6.20	28
R. Reagan	1988	3.49	5.50	78
George Bush	1989	3.56	5.30	27
George Bush	1990	3.65	5.60	103
George Bush	1991	3.82	6.90	111
George Bush	1992	3.79	7.50	114
Bill Clinton	1993	3.81	6.90	26
Bill Clinton	1994	3.68	6.10	47
Bill Clinton	1995	3.76	5.60	135
Bill Clinton	1996	3.75	5.40	256
Bill Clinton	1997	3.71	4.90	62
Bill Clinton	1998	3.80	4.50	182
Bill Clinton	1999	3.82	4.20	68
Bill Clinton	2000	3.88	4.00	199
G. W. Bush	2001	4.03	4.70	108
G. W. Bush	2002	4.11	5.80	96
G. W. Bush	2003	4.12	6.00	93
G. W. Bush	2004	4.10	5.50	22
G. W. Bush	2005	4.05	5.10	55
G. W. Bush	2006	4.05	4.60	97
G. W. Bush	2007	4.07	4.60	73
G. W. Bush	2008	4.19	5.80	30
Barack Obama	2009	4.40	9.30	150

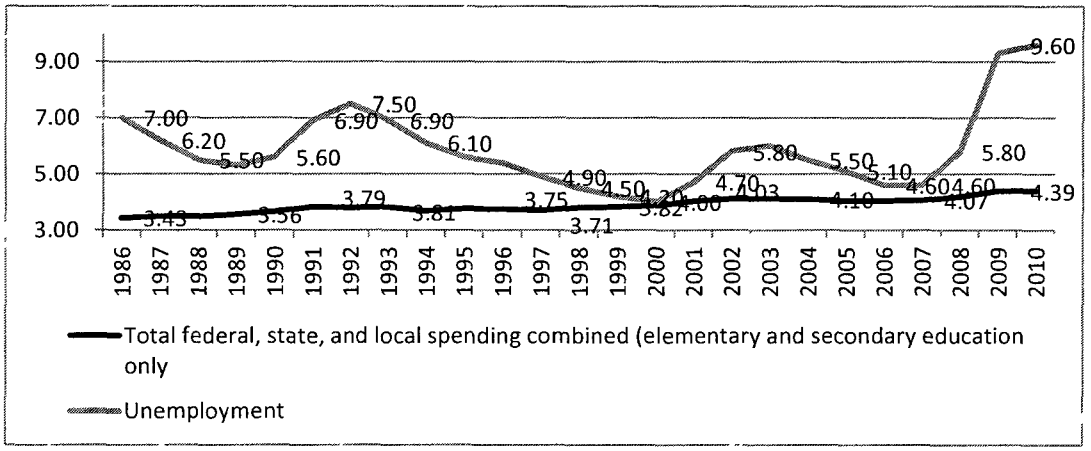
Table 3 (Continued)

Barack Obama	2010	4.39	9.60	175

Source: Author's calculation based on the data retrieved from Federal Reserve Archival System for Economic Research-FRASER (2011); U.S. Department of Labor: Bureau of Labor Statistics (2011); www.usgovernmentspending.com, 2011

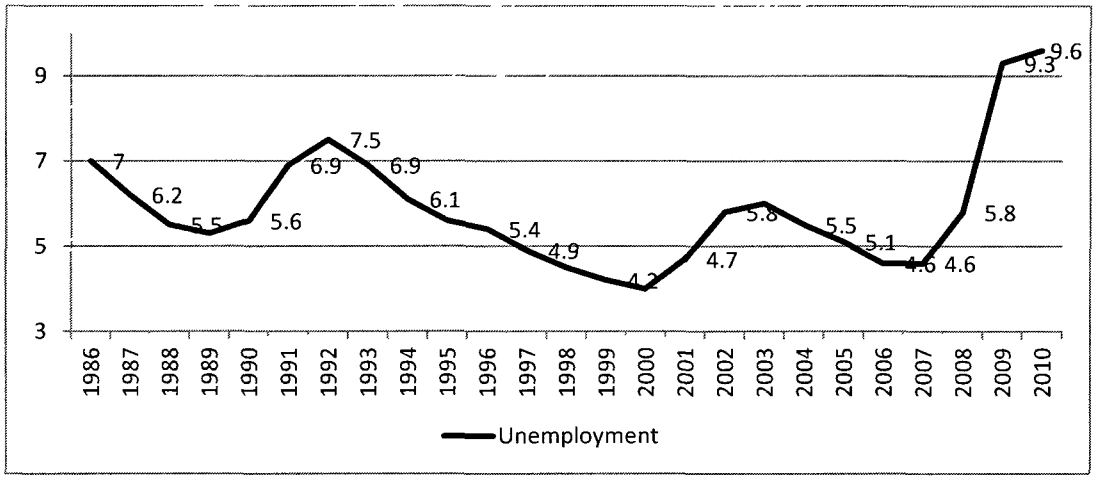
Figure 1, Figure 2, and Figure 3 help one understand the relationship between total elementary and secondary education spending and unemployment. Figure 2 and Figure 3 show total elementary and secondary education spending in percent of GDP keeps going up even though the economy suffers from high unemployment rates throughout the research period for a 25- year time span. As previously stated last two years of George Bush's presidency and first two years of Clinton's presidency show a high rate of unemployment, an average of 6.9 percent. This period also shows considerably higher education spending in percent of GDP when compared to other terms throughout the research period.

Figure 1. Unemployment versus total education spending in percent of GDP



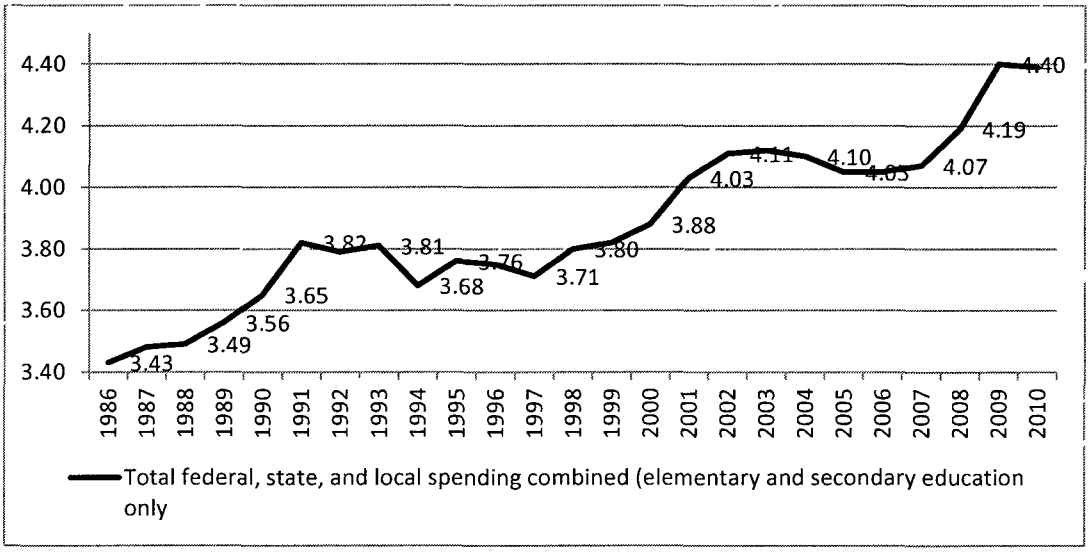
Source: Author's calculation based on the tables retrieved from United States Department of Labor (2011); Bureau of Labor Statistics (2011); Bureau of Economic Analysis (2011); and www.usgovernmentspending.com, 2011

Figure 2. Unemployment rates in the United States.



Source: Author's calculation based on the tables retrieved from United States Department of Labor (2011); Bureau of Labor Statistics (2011); Bureau of Economic Analysis (2011); and www.usgovernmentspending.com, 2011

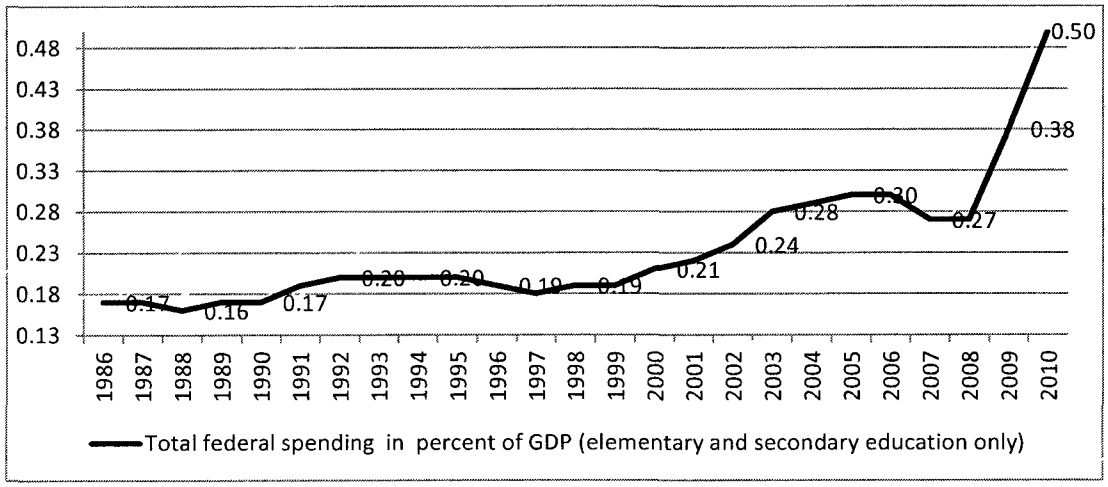
Figure 3. Total education spending in percent of GDP



Source: Author's calculation based on the tables retrieved from United States Department of Labor (2011); Bureau of Labor Statistics (2011); Bureau of Economic Analysis (2011); and www.usgovernmentspending.com, 2011

Figure 4 shows how federal government gets involved in investment in human capital through education that comes together with federal initiatives. Figure 4 indicates a period in which the percentage of federal funding reached its peak. No Child Left Behind was enacted in 2001 and education spending by the federal government showed an increasing trend since then. Federal education spending kept going up and reached at .05 percent of GDP in 2010 during the Obama presidency. Even though education is not solely a federal responsibility, Obama reauthorized the Elementary and Secondary Education Act (ESEA) of 1965 in 2010 to revitalize and improve No Child Left Behind of 2001. One can see that overall federal government spending appears to be smaller than that of states and local districts illustrated in following figures. This is understandable as education, by virtue of the 10th Amendment, is a state function. Federal spending on education usually comprises less than 10 percent of all education budgets.

Figure 4. Total federal spending on education in percent of GDP



Source: Author's calculation based on the tables retrieved from United States Department of Labor (2011); Bureau of Labor Statistics (2011); Bureau of Economic Analysis (2011); and www.usgovernmentspending.com

State and Local Governments' Perspective

The Tenth Amendment states "the powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." This places the responsibility for education on state and local authorities. Although the whole responsibility was put on the shoulders of the states and local territories, the federal government is still significantly involved in promoting and financing education (Owings & Kaplan. 2006). The U.S. Department of Education (USDE) reports that in 2010-2011 school year 89.2 percent of education funds came from non-federal, state and local sources (USDE, 2011). The remaining 10.8 percent came from federal sources, mainly from the U.S. Department of Education and some from the Department of Health and Human Services' Head Start program and the Department of Agriculture's School Lunch program (USDE, 2011). Plummer (2006) confirms that local districts were the main entity to take care of the funding of schools in the past. As inequity in educational settings became a serious issue because of economic disparities among the school districts, the states become involved in funding by energizing a partnership between state and local authorities to develop education settings that are both equitable and excellent (Plummer, 2006; Loeb, 2001; Soares, 2005; Adkins & Moomaw, 2003; Brimley & Garfield, 2002).

The case of *Serrano vs. Priest* was one of the significant cases that draws attentions to inequity and disparity issues in American Public schools and it consisted of three cases decided by the California Supreme Court: *Serrano v. Priest* (1971); *Serrano v. Priest* (1976); Serrano *v. Priest* (1977). Serrano v. Priest was challenged and overturned by California Supreme indicates a long lasting discussion with regard

to inequity and disparity issues in American public schools (Soares, 2005). Soares refers to the case of Serrano vs. Priest and writes:

> The case of *Serrano vs. Priest* ruled that the California education system was unconstitutional for discriminating among students in access to education. Wealthier communities, with larger tax bases, spent more per student than poorer communities while subject to lower tax rates. Since the Serrano ruling, many states have been reforming their education systems to reduce inequality. Specifically, they have been moving toward state financing of education to equalize spending across students. (p. 670)

On the other hand as states have greater control of schools, some studies point out concerns raised about public school performance, cost issues, and school attainment (Adkins & Moomaw, 2003; Hoxby, 1999). They argue that greater local control would lead to higher efficiency, lower costs and greater attainment since such issues would be under the direct control of local authorities who are in close contact with students physically (Adkins & Moomaw, 2003; Hoxby, 1999). However, as schools that are both equitable and excellent became more costly, greater state involvement became necessary to combat inequity (Plummer, 2006; Loeb, 2001; Soares, 2005; Adkins & Moomaw, 2003; Brimley & Garfield, 2002; Hoxby, 1999). Local funding of schools is mainly taken care of through property taxes; however there are also some other sources that include local sales taxes, property sales, investments, lotteries, severance taxes or taxes on the use of naturally occurring products such as oil or timber, corporate income tax, and sumptuary or sin taxes (Owings & Kaplan, 2006; Plummer, 2006). According to Owings and Kaplan (2006) and Plummer (2006), the funding burden is not divided between states

and local districts evenly, nor does each school district receive the same amount of funding from the states. The minimum foundation program is one of the programs to govern "...the cost of a minimum foundation program of education for public elementary and secondary schools, establish state and local contributions, and provide for the equitable allocation of state funds" (Louisiana Department of Education, 2011). States also run another program that modifies the amount of state financing among the districts. The districts with a greater tax base receive less state financing (Brimley & Garfield, 2002). Another popular program is called power equalization program. A collaborative research project directed by the Citizens Research Council of Michigan (CRC) and the Education Policy Center at Michigan State University (EPC) states:

> Under a power equalization program districts with taxable value per pupil below the minimum guarantee would receive a state subsidy to make up the difference between the guaranteed yield and the district's actual yield per mill of tax. (p.34)

Districts vary in terms of their ability to fund education. States also differ from one another in terms of their ability to fund education. Table 6 shows the averages by state for a 25-year period.

Table 4

State averages by selected variables: 1986-2010

#	State	GSP Per Capita	Education Spending Per Pupil	Fiscal Effort	Graduation Rate	Unemployment Rate
1	Alabama	24,685	5,455	0.22	66.88	5.8
2	Alaska	43,361	9,999	0.23	70.52	7.5
3	Arizona	26,833	5,465	0.20	71.02	5.72

Table 4 (Continued)

4	Arkansas	23,480	5,668	0.24	75.94	5.98
5	California	33,653	6,243	0.19	70.65	6.94
6	Colorado	33,208	6,465	0.19	76.25	5.20
7	Connecticut	41,732	9,818	0.24	79.74	4.90
8	Delaware	42,799	8,511	0.20	72.53	4.34
9	DC	40,555	11,277	0.28	58.55	7.19
10	Florida	27,784	6,312	0.23	64.94	5.87
11	Georgia	29,755	6,431	0.22	64.56	5.37
12	Hawaii	33,144	7,242	0.22	76.06	4.20
13	Idaho	24,350	5,005	0.21	80.13	5.54
14	Illinois	33,321	7,440	0.22	78.00	6.35
15	Indiana	28,029	6,853	0.24	75.34	5.20
16	Iowa	28,465	6,506	0.23	85.88	4.26
17	Kansas	28,699	6,802	0.24	79.47	4.74
18	Kentucky	25,502	6,144	0.24	73.32	6.46
19	Louisiana	28,231	6,118	0.22	63.32	6.72
20	Maine	25,995	7,976	0.31	77.58	5.24
21	Maryland	32,948	8,505	0.26	78.92	4.77
22	Massachusetts	37,728	9,077	0.24	79.41	5.28
23	Michigan	28,848	7,881	0.27	74.29	7.13
24	Minnesota	33,023	7,152	0.22	87.00	4.56
25	Mississippi	21,573	4,963	0.23	62.86	7.40
26	Missouri	28,368	6,377	0.22	78.13	5.53
27	Montana	23,639	6,826	0.29	83.19	5.41
28	Nebraska	29,973	6,928	0.23	86.08	3.26
29	Nevada	33,502	5,815	0.17	67.69	6.00
30	N. Hampshire	31,705	7,418	0.23	79.27	4.18
31	New Jersey	37,853	11,161	0.29	83.62	5.64
32	New Mexico	26,017	5,830	0.22	67.24	6.43
33	New York	37,310	11,262	0.30	66.69	6.02
34	North Carolina	29,367	5,865	0.20	70.19	5.28
35	North Dakota	27,095	6,110	0.23	86.88	3.77
36	Ohio	29,020	7,253	0.25	78.65	6.08
37	Oklahoma	25,302	5,469	0.22	76.90	5.23
38	Oregon	28,580	7,302	0.26	72.46	6.55
39	Pennsylvania	29,546	8,330	0.28	81.35	5.70
40	Rhode Island	29,956	9,271	0.31	75.12	5.92
41	South Carolina	25,373	6,126	0.24	62.88	6.04
42	South Dakota	27,963	5,742	0.21	83.33	3.57
43	Tennessee	27,895	5,365	0.19	67.56	5.90

Table 4 (Continued)

44	Texas	30,832	6,073	0.20	70.82	6.28
45	Utah	25,916	4,294	0.17	80.03	4.55
46	Vermont	28,012	8,975	0.32	84.04	4.32
47	Virginia	33,233	6,830	0.21	77.33	4.23
48	Washington	32,642	6,631	0.20	75.36	6.28
49	West Virginia	22,323	7,034	0.32	77.20	7.54
50	Wisconsin	28,610	7,679	0.27	85.50	4.84
51	Wyoming	35,967	8,357	0.23	77.78	5.11

Source: USDE, 2010; National Center for Education Statistics, 2010

Table 5

State averages by ranking of Education Spending Per Pupil: 1986-2010

#	State	Education Spending Per Pupil	GSP Per Capita	Fiscal Effort	Graduation Rate	Unemployment Rate
1	DC	11,277	40,555	0.28	58.55	7.19
2	New York	11,262	37,310	0.30	66.69	6.02
3	New Jersey	11,161	37,853	0.29	83.62	5.64
4	Alaska	9,999	43,361	0.23	70.52	7.5
5	Connecticut	9,818	41,732	0.24	79.74	4.90
6	Rhode Island	9,271	29,956	0.31	75.12	5.92
7	Massachusetts	9,077	37,728	0.24	79.41	5.28
8	Vermont	8,975	28,012	0.32	84.04	4.32
9	Delaware	8,511	42,799	0.20	72.53	4.34
10	Maryland	8,505	32,948	0.26	78.92	4.77
11	Wyoming	8,357	35,967	0.23	77.78	5.11
12	Pennsylvania	8,330	29,546	0.28	81.35	5.70
13	Maine	7,976	25,995	0.31	77.58	5.24
14	Michigan	7,881	28,848	0.27	74.29	7.13
15	Wisconsin	7,679	28,610	0.27	85.50	4.84
16	Illinois	7,440	33,321	0.22	78.00	6.35
17	N. Hampshire	7,418	31,705	0.23	79.27	4.18
18	Oregon	7,302	28,580	0.26	72.46	6.55
19	Ohio	7,253	29,020	0.25	78.65	6.08
20	Hawaii	7,242	33,144	0.22	76.06	4.20
21	Minnesota	7,152	33,023	0.22	87.00	4.56

Table 5 (Continued)

22	West Virginia	7,034	22,323	0.32	77.20	7.54
23	Nebraska	6,928	29,973	0.23	86.08	3.26
24	Indiana	6,853	28,029	0.24	75.34	5.20
25	Virginia	6,830	33,233	0.21	77.33	4.23
26	Montana	6,826	23,639	0.29	83.19	5.41
27	Kansas	6,802	28,699	0.24	79.47	4.74
28	Washington	6,631	32,642	0.20	75.36	6.28
29	Iowa	6,506	28,465	0.23	85.88	4.26
30	Colorado	6,465	33,208	0.19	76.25	5.20
31	Georgia	6,431	29,755	0.22	64.56	5.37
32	Missouri	6,377	28,368	0.22	78.13	5.53
33	Florida	6,312	27,784	0.23	64.94	5.87
34	California	6,243	33,653	0.19	70.65	6.94
35	Kentucky	6,144	25,502	0.24	73.32	6.46
36	S. Carolina	6,126	25,373	0.24	62.88	6.04
37	Louisiana	6,118	28,231	0.22	63.32	6.72
38	North Dakota	6,110	27,095	0.23	86.88	3.77
39	Texas	6,073	30,832	0.20	70.82	6.28
40	N. Carolina	5,865	29,367	0.20	70.19	5.28
41	New Mexico	5,830	26,017	0.22	67.24	6.43
42	Nevada	5,815	33,502	0.17	67.69	6.00
43	South Dakota	5,742	27,963	0.21	83.33	3.57
44	Arkansas	5,668	23,480	0.24	75.94	5.98
45	Oklahoma	5,469	25,302	0.22	76.90	5.23
46	Arizona	5,465	26,833	0.20	71.02	5.72
47	Alabama	5,455	24,685	0.22	66.88	5.8
48	Tennessee	5,365	27,895	0.19	67.56	5.90
49	Idaho	5,005	24,350	0.21	80.13	5.54
50	Mississippi	4,963	21,573	0.23	62.86	7.40
51	Utah	4,294	25,916	0.17	80.03	4.55

Source: USDE, 2010; National Center for Education Statistics, 2010

Table 6

State averages by ranking of Fiscal Effort: 1986-2010

#	State	Fiscal Effort	GSP Per Capita	Education Spending Per Pupil	Graduation Rate	Unemployment Rate
1	Vermont	0.32	28,012	8,975	84.04	4.32
2	West Virginia	0.32	22,323	7,034	77.20	7.54
3	Rhode Island	0.31	29,956	9,271	75.12	5.92
4	Maine	0.31	25,995	7,976	77.58	5.24
5	New York	0.30	37,310	11,262	66.69	6.02
6	New Jersey	0.29	37,853	11,161	83.62	5.64
7	Montana	0.29	23,639	6,826	83.19	5.41
8	Pennsylvania	0.28	29,546	8,330	81.35	5.70
9	DC	0.28	40,555	11,277	58.55	7.19
10	Michigan	0.27	28,848	7,881	74.29	7.13
11	Wisconsin	0.27	28,610	7,679	85.50	4.84
12	Maryland	0.26	32,948	8,505	78.92	4.77
13	Oregon	0.26	28,580	7,302	72.46	6.55
14	Ohio	0.25	29,020	7,253	78.65	6.08
15	Indiana	0.24	28,029	6,853	75.34	5.20
16	S. Carolina	0.24	25,373	6,126	62.88	6.04
17	Arkansas	0.24	23,480	5,668	75.94	5.98
18	Kentucky	0.24	25,502	6,144	73.32	6.46
19	Massachusetts	0.24	37,728	9,077	79.41	5.28
20	Kansas	0.24	28,699	6,802	79.47	4.74
21	Connecticut	0.24	41,732	9,818	79.74	4.90
22	N. Hampshire	0.23	31,705	7,418	79.27	4.18
23	Wyoming	0.23	35,967	8,357	77.78	5.11
24	Nebraska	0.23	29,973	6,928	86.08	3.26
25	Alaska	0.23	43,361	9,999	70.52	7.5
26	Mississippi	0.23	21,573	4,963	62.86	7.40
27	Iowa	0.23	28,465	6,506	85.88	4.26
28	Florida	0.23	27,784	6,312	64.94	5.87
29	North Dakota	0.23	27,095	6,110	86.88	3.77
30	Missouri	0.22	28,368	6,377	78.13	5.53
31	New Mexico	0.22	26,017	5,830	67.24	6.43
32	Illinois	0.22	33,321	7,440	78.00	6.35
33	Alabama	0.22	24,685	5,455	66.88	5.8
34	Hawaii	0.22	33,144	7,242	76.06	4.20

Table 6 (Continued)

35	Louisiana	0.22	28,231	6,118	63.32	6.72
36	Minnesota	0.22	33,023	7,152	87.00	4.56
37	Georgia	0.22	29,755	6,431	64.56	5.37
38	Oklahoma	0.22	25,302	5,469	76.90	5.23
39	Idaho	0.21	24,350	5,005	80.13	5.54
40	Virginia	0.21	33,233	6,830	77.33	4.23
41	South Dakota	0.21	27,963	5,742	83.33	3.57
42	Arizona	0.20	26,833	5,465	71.02	5.72
43	Washington	0.20	32,642	6,631	75.36	6.28
44	N. Carolina	0.20	29,367	5,865	70.19	5.28
45	Delaware	0.20	42,799	8,511	72.53	4.34
46	Texas	0.20	30,832	6,073	70.82	6.28
47	Colorado	0.19	33,208	6,465	76.25	5.20
48	Tennessee	0.19	27,895	5,365	67.56	5.90
49	California	0.19	33,653	6,243	70.65	6.94
50	Nevada	0.17	33,502	5,815	67.69	6.00
51	Utah	0.17	25,916	4,294	80.03	4.55

Source: USDE, 2010; National Center for Education Statistics, 2010

Table 7

State averages by ranking of Graduation Rate: 1986-2010

#	State	Graduation Rate	GSP Per Capita	Education Spending Per Pupil	Fiscal Effort	Unemployment Rate
1	Minnesota	87.00	33,023	7,152	0.22	4.56
2	North Dakota	86.88	27,095	6,110	0.23	3.77
3	Nebraska	86.08	29,973	6,928	0.23	3.26
4	Iowa	85.88	28,465	6,506	0.23	4.26
5	Wisconsin	85.50	28,610	7,679	0.27	4.84
6	Vermont	84.04	28,012	8,975	0.32	4.32
7	New Jersey	83.62	37,853	11,161	0.29	5.64
8	South Dakota	83.33	27,963	5,742	0.21	3.57
9	Montana	83.19	23,639	6,826	0.29	5.41
10	Pennsylvania	81.35	29,546	8,330	0.28	5.70
11	Idaho	80.13	24,350	5,005	0.21	5.54
12	Utah	80.03	25,916	4,294	0.17	4.55

Table 7 (Continued)

13	Connecticut	79.74	41,732	9,818	0.24	4.90
14	Kansas	79.47	28,699	6,802	0.24	4.74
15	Massachusetts	79.41	37,728	9,077	0.24	5.28
16	N. Hampshire	79.27	31,705	7,418	0.23	4.18
17	Maryland	78.92	32,948	8,505	0.26	4.77
18	Ohio	78.65	29,020	7,253	0.25	6.08
19	Missouri	78.13	28,368	6,377	0.22	5.53
20	Illinois	78.00	33,321	7,440	0.22	6.35
21	Wyoming	77.78	35,967	8,357	0.23	5.11
22	Maine	77.58	25,995	7,976	0.31	5.24
23	Virginia	77.33	33,233	6,830	0.21	4.23
24	West Virginia	77.20	22,323	7,034	0.32	7.54
25	Oklahoma	76.90	25,302	5,469	0.22	5.23
26	Colorado	76.25	33,208	6,465	0.19	5.20
27	Hawaii	76.06	33,144	7,242	0.22	4.20
28	Arkansas	75.94	23,480	5,668	0.24	5.98
29	Washington	75.36	32,642	6,631	0.20	6.28
30	Indiana	75.34	28,029	6,853	0.24	5.20
31	Rhode Island	75.12	29,956	9,271	0.31	5.92
32	Michigan	74.29	28,848	7,881	0.27	7.13
33	Kentucky	73.32	25,502	6,144	0.24	6.46
34	Delaware	72.53	42,799	8,511	0.20	4.34
35	Oregon	72.46	28,580	7,302	0.26	6.55
36	Arizona	71.02	26,833	5,465	0.20	5.72
37	Texas	70.82	30,832	6,073	0.20	6.28
38	California	70.65	33,653	6,243	0.19	6.94
39	Alaska	70.52	43,361	9,999	0.23	7.5
40	N. Carolina	70.19	29,367	5,865	0.20	5.28
41	Nevada	67.69	33,502	5,815	0.17	6.00
42	Tennessee	67.56	27,895	5,365	0.19	5.90
43	New Mexico	67.24	26,017	5,830	0.22	6.43
44	Alabama	66.88	24,685	5,455	0.22	5.8
45	New York	66.69	37,310	11,262	0.30	6.02
46	Florida	64.94	27,784	6,312	0.23	5.87
47	Georgia	64.56	29,755	6,431	0.22	5.37
48	Louisiana	63.32	28,231	6,118	0.22	6.72
49	S. Carolina	62.88	25,373	6,126	0.24	6.04
50	Mississippi	62.86	21,573	4,963	0.23	7.40
51	DC	58.55	40,555	11,277	0.28	7.19

Source: USDE, 2010; National Center for Education Statistics, 2010

Table 8

State averages by ranking of Unemployment Rates: 1986-2010

#	State	Unempl. Rate	GSP Per Capita	Education Spending Per Pupil	Fiscal Effort	Grad. Rate
1	W. Virginia	7.54	22,323	7,034	0.32	77.20
2	Alaska	7.46	43,361	9,999	0.23	70.52
3	Mississippi	7.40	21,573	4,963	0.23	62.86
4	DC	7.19	40,555	11,277	0.28	58.55
5	Michigan	7.13	28,848	7,881	0.27	74.29
6	California	6.94	33,653	6,243	0.19	70.65
7	Louisiana	6.72	28,231	6,118	0.22	63.32
8	Oregon	6.55	28,580	7,302	0.26	72.46
9	Kentucky	6.46	25,502	6,144	0.24	73.32
10	New Mexico	6.43	26,017	5,830	0.22	67.24
11	Illinois	6.35	33,321	7,440	0.22	78.00
12	Texas	6.28	30,832	6,073	0.20	70.82
13	Washington	6.28	32,642	6,631	0.20	75.36
14	Ohio	6.08	29,020	7,253	0.25	78.65
15	S. Carolina	6.04	25,373	6,126	0.24	62.88
16	New York	6.02	37,310	11,262	0.30	66.69
17	Nevada	6.00	33,502	5,815	0.17	67.69
18	Arkansas	5.98	23,480	5,668	0.24	75.94
19	Rhode Island	5.92	29,956	9,271	0.31	75.12
20	Tennessee	5.90	27,895	5,365	0.19	67.56
21	Florida	5.87	27,784	6,312	0.23	64.94
22	Alabama	5.78	24,685	5,455	0.22	66.88
23	Arizona	5.72	26,833	5,465	0.20	71.02
24	Pennsylvania	5.70	29,546	8,330	0.28	81.35
25	New Jersey	5.64	37,853	11,161	0.29	83.62
26	Idaho	5.54	24,350	5,005	0.21	80.13
27	Missouri	5.53	28,368	6,377	0.22	78.13
28	Montana	5.41	23,639	6,826	0.29	83.19
29	Georgia	5.37	29,755	6,431	0.22	64.56
30	N. Carolina	5.28	29,367	5,865	0.20	70.19
31	Massachusetts	5.28	37,728	9,077	0.24	79.41
32	Maine	5.24	25,995	7,976	0.31	77.58
33	Oklahoma	5.23	25,302	5,469	0.22	76.90
34	Indiana	5.20	28,029	6,853	0.24	75.34

Table 8 (Continued)

35	Colorado	5.20	33,208	6,465	0.19	76.25
36	Wyoming	5.11	35,967	8,357	0.23	77.78
37	Connecticut	4.90	41,732	9,818	0.24	79.74
38	Wisconsin	4.84	28,610	7,679	0.27	85.50
39	Maryland	4.77	32,948	8,505	0.26	78.92
40	Kansas	4.74	28,699	6,802	0.24	79.47
41	Minnesota	4.56	33,023	7,152	0.22	87.00
42	Utah	4.55	25,916	4,294	0.17	80.03
43	Delaware	4.34	42,799	8,511	0.20	72.53
44	Vermont	4.32	28,012	8,975	0.32	84.04
45	Iowa	4.26	28,465	6,506	0.23	85.88
46	Virginia	4.23	33,233	6,830	0.21	77.33
47	Hawaii	4.20	33,144	7,242	0.22	76.06
48	N. Hampshire	4.18	31,705	7,418	0.23	79.27
49	North Dakota	3.77	27,095	6,110	0.23	86.88
50	South Dakota	3.57	27,963	5,742	0.21	83.33
51	Nebraska	3.26	29,973	6,928	0.23	86.08

Source: USDE, 2010; National Center for Education Statistics, 2010

Table 9

Expenditure on education by school grade level in percent of GDP

Year	GDP in $ billion	Total local spending in percent of GDP (elementary and secondary education only)	Total state spending in percent of GDP (elementary and secondary education only)	Total federal spending in percent of GDP (elementary and secondary education only)	Total combined spending (elementary and secondary education only)
1986	4460.1	3.23	0.03	0.17	3.43
1987	4736.4	3.28	0.03	0.17	3.48
1988	5100.4	3.30	0.03	0.16	3.49
1989	5482.1	3.36	0.03	0.17	3.56
1990	5800.5	3.45	0.03	0.17	3.65
1991	5992.1	3.60	0.03	0.19	3.82

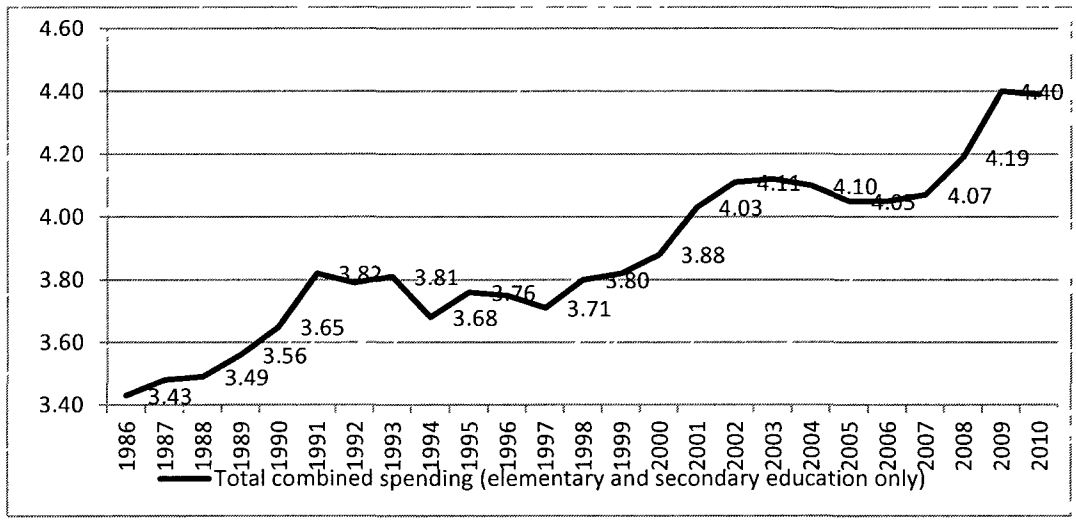
Table 9 (Continued)

1992	6342.3	3.55	0.04	0.20	3.79
1993	6667.4	3.57	0.04	0.20	3.81
1994	7085.2	3.45	0.03	0.20	3.68
1995	7414.7	3.53	0.03	0.20	3.76
1996	7838.5	3.53	0.03	0.19	3.75
1997	8332.4	3.50	0.03	0.18	3.71
1998	8793.5	3.58	0.03	0.19	3.80
1999	9353.5	3.60	0.03	0.19	3.82
2000	9951.5	3.64	0.03	0.21	3.88
2001	10286.2	3.77	0.04	0.22	4.03
2002	10642.3	3.83	0.04	0.24	4.11
2003	11142.1	3.80	0.04	0.28	4.12
2004	11867.8	3.76	0.05	0.29	4.10
2005	12638.4	3.70	0.05	0.30	4.05
2006	13398.9	3.69	0.06	0.30	4.05
2007	14077.6	3.74	0.06	0.27	4.07
2008	14441.4	3.86	0.06	0.27	4.19
2009	14119	3.96	0.06	0.38	4.40
2010	14508.2	3.83	0.06	0.50	4.39

Source: www.usgovernmentspending.com, 2011

Table 9 shows elementary and secondary education spending by federal, state, and local districts during the research period covered in this study. Table 8 indicates that local districts play the major role in funding elementary and secondary education. It also shows states have very little involvement in funding elementary and secondary education. Figure 5 indicates total education spending by local, states, and federal government combined in percent of gross domestic product throughout the period covered in this research. Total spending includes elementary and secondary education only.

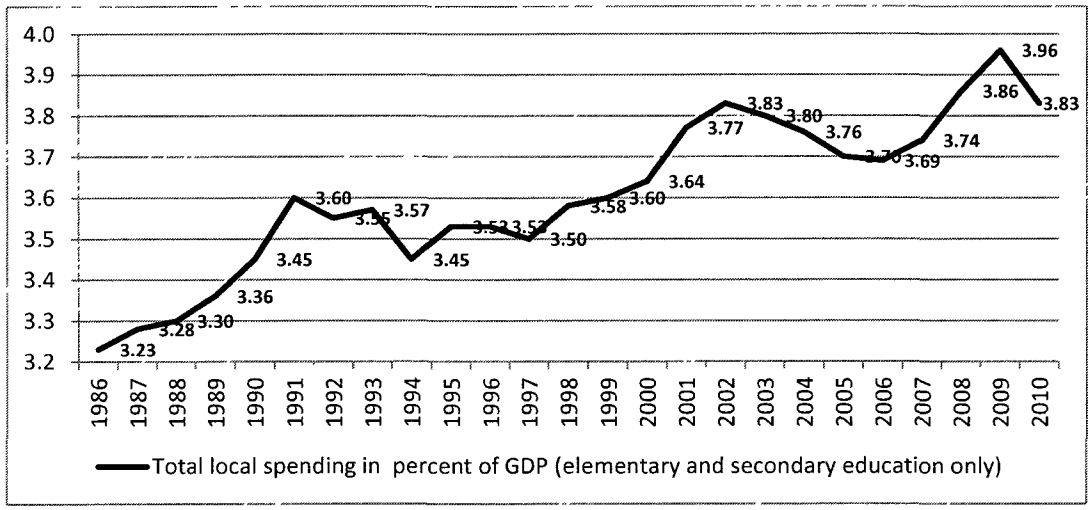
Figure 5. Total federal, state, and local spending combined in percent of GDP



Source: www.usgovernmentspending.com, 2011

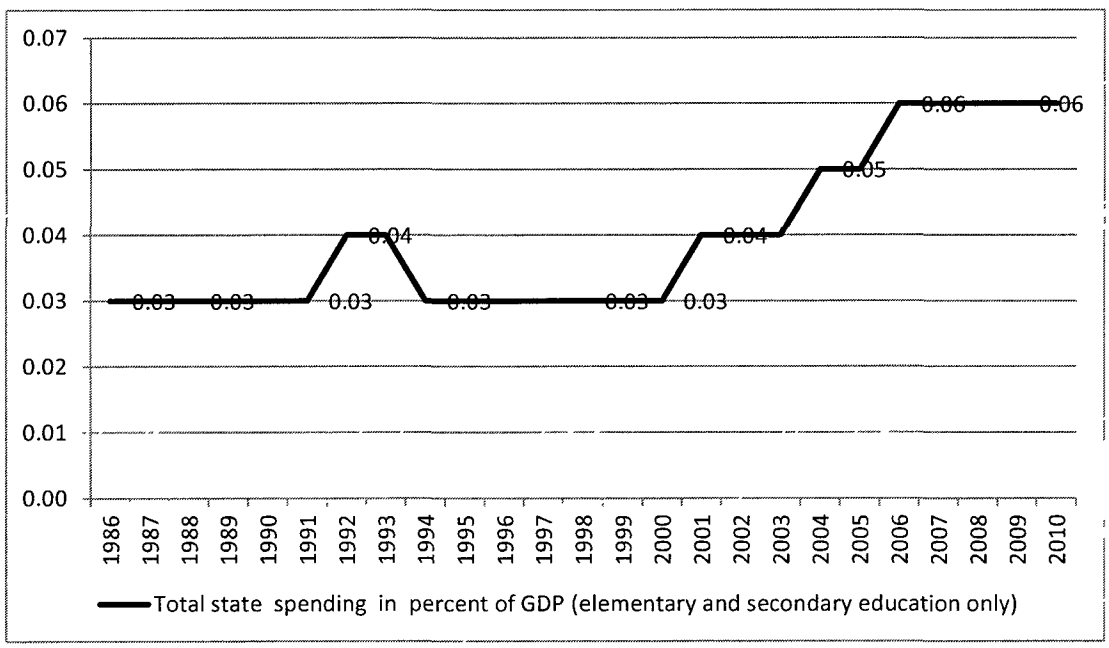
Figure 6 shows total local spending on elementary and secondary education in percent of GDP. Local spending includes spending by local school districts. Obviously there has been a steady increase in education spending since 1986. The fluctuations show education spending is valued and appreciated even though economy is suffered from several economic problems such as unemployment. The Figures 5 through 8 help one make comparisons among federal, state and local districts in terms of their involvement in education spending. They show how local districts play a major role in funding education. They also indicate that caring about education is primarily a state responsibility which is stated by the Tenth Amendment, "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

Figure 6. Total local spending in percent of GDP



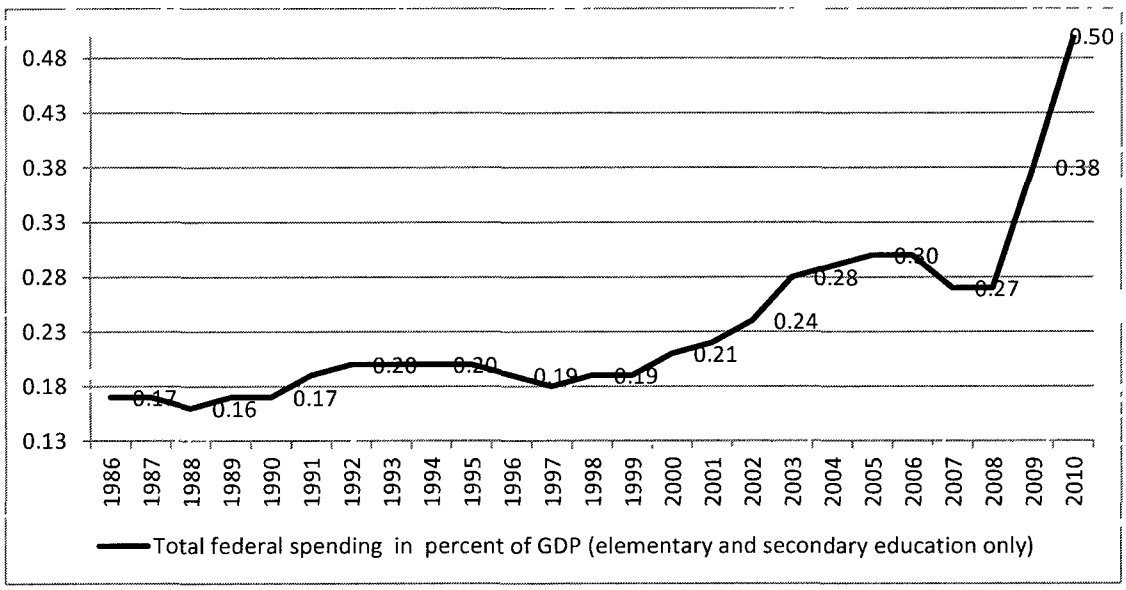
Source: www.usgovernmentspending.com, 2011

Figure 7. Total state spending in percent of GDP



Source: www.usgovernmentspending.com, 2011

Figure 8. Total federal spending in percent of GDP

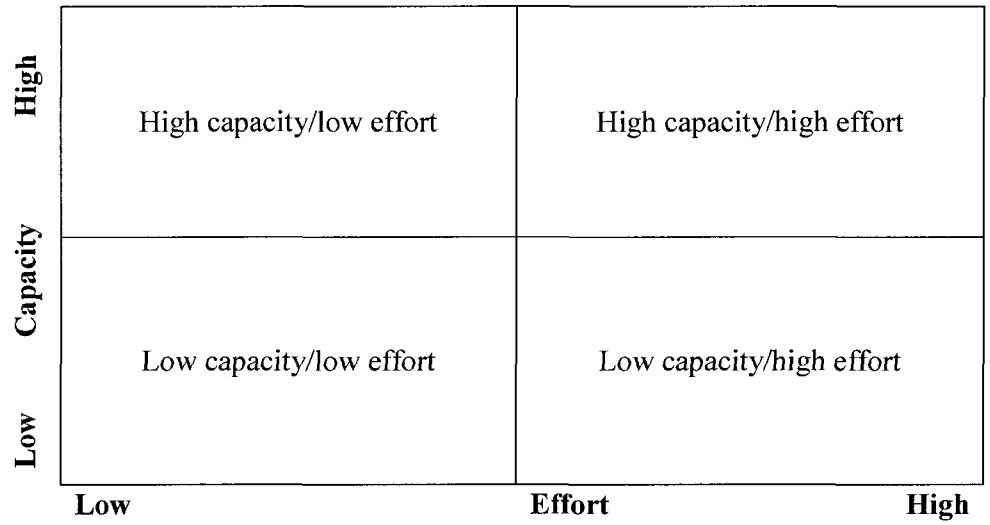


Source: www.usgovernmentspending.com, 2011

Fiscal Capacity and Fiscal Effort

Owings and Kaplan (2006) define fiscal capacity "...as the tax base of a locality, a state, or a nation as measured by some form of economic income or wealth" (p. 152). Depending on the size and the type of jurisdictions the way capacity is measured varies. While the per capita property value for residents might count towards a county's fiscal capacity, per capita income for state residents might count towards a state's fiscal capacity (Owings & Kaplan, 2006). For jurisdictions, capacity and effort are the key factors which determine the direction their decisions take and the extent to which they plan to fund education (p. 171). On the other hand, fiscal effort indicates to what extent a jurisdiction (a locality, a state, or a nation) allocates "its resources in relation to capacity- or ability to pay" (Owings & Kaplan, 2006, p. 184).

Figure 9. Relative Fiscal Capacity and Effort



Source: Owings and Kaplan (2006, p.152)

On fiscal effort Owings and Kaplan (2006) write:

> Measuring capacity is a good place to start examining how much a nation, state, or locality can afford to spend on education. The relative effort of that spending-the degree of exertion or fiscal struggle a community commits to its resources for education-tells a more robust story about what people value (p. 184).

Figure 9 gives a general picture of how jurisdictions could differ from one another in their effort to fund education regardless of their capacity. It indicates that there is no linear correlation between capacity and effort. A jurisdiction might be wealthier than another one; however, it might show a lower effort in funding. Owings and Kaplan (2006) explain this variation by the public's interest and attitude about their public schools, the percentage of population whose children are in public versus private schools, and leadership of the municipality and the school system.

In terms of a computing effort, Owings and Kaplan (2006) explain it as "...the ratio of school revenue (expenditures) to the overall tax base (p. 186). The equation would be as:

$$E=R/TB.$$

In this equation E denotes effort, R denotes revenue for school expenditures, and TB denotes the tax base (Owings and Kaplan, 2006).

Significant Landmarks in the History of American Education System

Landmarks in the history of American education system indicate that the government's active involvement in American education system has been gradual. Very early American history shows little federal government involvement (Berube 1991). However, as the sense of the support for public education gets stronger and public education is considered not only a moral duty but also a legal responsibility, there is an evolving and stronger government involvement (Dewey, 1897; Berube, 1991; Owings and Kaplan, 2006). As mentioned above in the introduction section, too, the "sixteenth section" of the Land Ordinance of 1785 that allocated federal funding for public schools under the supervision of the new states and the Northwest Ordinance of 1787 that approved land grants to initiate and establish education showed the earliest government involvements in education (Owings and Kaplan, 2006).

Decentralization of the government during Andrew Jackson's presidency is another significant landmark since states were given more authority and responsibility for education. Since then the federal government was not involved in education as it was in the past. Rather, the federal government was involved in education through a motive that was derived from "...its own national survival needs" (Owings and Kaplan, 2006, p. 51).

U.S. Military Academy in 1802, the Naval Academy in 1845, the Coast Guard Academy in 1876, the Merchant Marine Academy in 1936, and United States Air Force Academy in 1954 are some of the examples that show the change in the federal government's motive for education spending (Owings and Kaplan, 2006).

The G.I. Bill – the Servicemen's Readjustment Act of 1944 is also another historical landmark in terms of the relationship between education and economy. The G.I. Bill helped thousands of servicemen who returned from the war complete their education and enter the labor market as highly skilled professionals who made significant contributions to the economy (Owings and Kaplan, 2006). Similarly, the National Defense Education Act (NDEA) of 1958 also shows how federal government got involved in funding American education system. The National Defense Education Act (NDEA) of 1958 aimed at emphasizing on math and sciences and protecting national security of the United States against its rivals in space (USDE, 2010).

Another significant landmark, *A Nation at Risk*: The Imperative for Educational Reform of 1983 was a report submitted by the National Commission on Excellence in Education in April 1983 (USDE, 2010). The commission was created after the Secretary of Education raised serious concerns about the inconsistency and inefficiency in the American education system, particularly in science education. Finn (1989) asserts that the report was a warning to show the depression in the American education system. It also advised that if the right actions were not taken "American social structure would crack, culture would erode, the economy would totter, [and] the national defense would weaken" (Finn, 1989, p.17). The concerns portrayed in *A Nation at Risk* indicate that a depression in the American education system could also lead to a depression in the socio-

economic dynamics of the nation as well. Hofstein and Ben Zvi (1986) argue that the crisis in science education was the main drive behind *A Nation at Risk*. *A Nation at Risk* ended up with recommendations that were believed to revitalize the American education system. These recommendations were:

> State and local high school graduation requirements be strengthened and that, at a minimum, all students seeking a diploma be required to lay the foundations in the Five New Basics by taking the following curriculum during their 4 years of high school: (a) 4 years of English; (b) 3 years of mathematics; (c) 3 years of science; (d) 3 years of social studies; and (e) one-half year of computer science. For the college-bound, 2 years of foreign language in high school are strongly recommended in addition to those taken earlier. (U.S. Department of Education, 2010)

A Nation at Risk is considered a document that prompted one of the most significant American education reforms and valued and appreciated by many scholars and educational leaders. However, Berliner and Biddle (1996) harshly criticize *A Nation at Risk* because of the unnecessary significance given to standardized tests while evaluating and comparing the quality of schooling in educational settings in various locations that socio-economically deviate from one another. According to them a lack of standardization of the tests is not the main issue in American education system; rather segregated, underfunded, understaffed, and overcrowded schools cause disparities among schools (Berliner & Biddle, 1996).

The No Child Left Behind Act (NCLB) of 2001 is another important landmark

showing extensive government involvement. According to U.S. Department of Education No Child Left Behind (NCLB) "...is based on stronger accountability for results, more freedom for states and communities, proven education methods, and more choices for parents" (USDE, 2010). The No Child Left Behind Act "...demands that every teacher of core academic subjects must be deemed to be highly qualified in every subject they teach by the end of the 2005–2006 academic year" (Smith, 2008). No Child Left Behind is a good example of involvement in education through federal funds. As previously stated, Dewey (1897) sees education as a community's paramount moral duty. No Child Left Behind moves this understanding one step forward and puts legal responsibility on the states and local authorities in partnership with federal government.

Title I of the Elementary and Secondary Education Act of 1965 was enacted to guarantee "...that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments (USDE, 2010). Title I of the Elementary and Secondary Education Act of 1965 was revitalized and strengthened by enacting No Child Left Behind of 2001. No Child Left Behind of 2001 was improved by reauthorization of the same Elementary and Secondary Education Act (ESEA) by Obama Administration in 2010 to signify "...equal access to education and establishes high standards and accountability" (USDE, 2011; Office of Superintendent and Public Instruction of State of Washington, 2011).

Economic Report of the President (1986-2010)

The Chairman of the Council of Economic Advisers writes the Economic Report of the President annually and submits it to Congress every fiscal year (Federal Reserve

Archival System for Economic Research-FRASER, 2011). It is a synopsis of the nation's economic progress and submitted to Congress within ten days after the budget of the United States Government is submitted (FRASER, 2011). The report submitted by FRASER portrays current economic dynamics, trends, goals, and the issues including the issues of employment/unemployment, productivity, income distribution, and federal budget expenditures (FRASER, 2011). One can see a general picture of current administrations' projections for economy through the remarks made in this report. Education is one of the key issues addressed almost in all of these economic reports. However, when reviewed carefully each report submitted to Congress varies in terms of their emphasis on the concept of education as a whole. The American economy fluctuates from term to term and shows different characteristics in terms of the problems faced. It would help researchers see the link between education and socio-economic dynamics by questioning to what extent education is emphasized and prioritized during recessions in these economic reports to the presidents.

Scholarly Perspectives on Education Spending

The literature shows that the scholars who address education issues generally see investment in human capital through education as a long term investment that requires patience to see the benefits in the long run. Adam Smith (1937) believes that there is a significant relationship between education spending and economic growth and argues that as long as well governed education expenditures generate benefits not only for a certain group of people but also for the whole society. He writes:

> The expense of defending the society, and that of supporting the dignity of the chief magistrate, are both laid out for the general benefit of the whole

> society. It is reasonable, therefore, that they should be defrayed by the general contribution of the whole society, all the different members contributing, as nearly as possible, in proportion to their respective abilities. (p. 767)

Owings and Kaplan (2006) look at investment in human capital through education from a holistic and a long term investment perspective. They confirm that investment in human capital through education creates a synergy that brings several socio-economic benefits together. They assert:

> Simply put, education creates a synergy with the economy. Likewise, a lack of education creates a slow but sure atrophic impact on economy. Education is an investment in the future of a community. By investing in the human capital of the next generation, a community avoids problems associated with blighted and decaying communities and creates the conditions for a continued high quality of life that attracts businesses and citizens with a low need for social support programs. (p.116)

Dewey (1897) sees caring education as a moral duty. He affirms that societies can direct their economies in the direction in which they wish to move by making investment in human capital through education (p. 17). Richard Musgrave defines the concept of merit good and suggests that public expenditures such as education spending, welfare, and health spending could generate benefits for the whole society in the long term as positive externalities (Musgrave, 1956). Milton Friedman (1955) looks at investment in human capital through education from a holistic perspective (Friedman's neighborhood effect perspective) and affirms that every single member of a society could benefit from a

well-educated individual who lives within the same neighborhood. He believes such a well-educated individual would create a positive synergy and promote a stable and democratic society. He writes:

> In consequence, the gain from the education of a child accrues not only to the child or to his parents but to other members of the society; the education of my child contributes to other people's welfare by promoting a stable and democratic society. Yet it is not feasible to identify the particular individuals (or families) benefited or the money value of the benefit and so to charge for the services rendered. There is therefore a significant neighborhood effect. (p. 134)

Statement of the Research Problem

Unemployment is one of the most overwhelming economic problems in almost all economies. Economics literature shows that there are several methods to combat unemployment from different perspectives and disciplines. There is also a wide range of opinion in the studies, books, and journal articles as to whether education has any significant impact on the economy particularly on the fight against unemployment. Some studies see only little or no significant impact, while some others see a significant link between investment in human capital through education and employment. Thus, the extent of the relationship between investment in human capital and unemployment remains elusive, which requires the necessity of a thorough research for clarification.

Research Question

This study inquired whether there was a significant correlation between education and economy in terms of the impacts of investment in human capital on unemployment.

In other words the major research question that was answered in this study is:

- Is there a significant correlation between education and economy in terms of the impacts of investment in human capital through education spending per pupil and states' fiscal effort on unemployment while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending?

The primary purpose of the study was to understand to what extent variation in unemployment rates could be explained by variation in investment in human capital through education. Therefore, this research sought to evaluate the long-term effect of several measures of education expenditure and states' fiscal effort on unemployment rates. All of the control variables are believed to be correlated with this study's dependent variable.

CHAPTER 3

METHODOLOGY

Introduction

Chapter 3 outlines the methodology employed in this research. As previously mentioned unemployment and the methods to combat unemployment are among the most challenging issues discussed in the literature. The relationship between investment in human capital through education and unemployment is also long discussed in the literature from various perspectives. There are a significant number of studies examining whether investment in human capital through education has any significant impact on the fight against unemployment. Some studies see little or no significant impact, while some others show a significant relationship between investment in human capital through education and the fight against unemployment. Thus, the extent of the relationship between investment in human capital through education and unemployment remains elusive, which necessitates thorough research for clarification.

Research Question

The primary purpose of the study was to understand to what extent variation in unemployment rates could be explained by variation in investment in human capital through education. This research sought to evaluate the long-term effect of several measures of education expenditure on unemployment rates, while accounting for other variables as well. This study inquired whether there was a significant correlation between education and economy in terms of the impacts of investment in human capital on unemployment. In other words the major research question that was answered in this study was:

- Is there a significant correlation between education and economy in terms of the impacts of investment in human capital through education spending per pupil and states' fiscal effort on unemployment while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending?

Research Design and Sample

This research presented an empirical work with qualitative contribution. The author of this research expected to add to the literature through the empirical results achieved in this study. The study employed panel data analysis to examine the relationship between unemployment and several determining factors in 50 states and Washington D.C. over 25 years. Washington D.C. was treated as a state for the purposes of this study. Finally, this study enabled explaining to what extent variation in the dependent variable can be explained by variations in the independent variables over time.

Data Collection and Sources

In this empirical study, existing data sources were used. The data used in this research was retrieved and collected from official and reliable governmental or non-governmental web sites (U.S. Department of Education, National Center for Education Statistics, U.S. Census Bureau of Labor, the Bureau of Labor Statistics, etc.). However, even though they are all reliable sources for an academic study, there are slight variations among these data sources. This study sometimes had to take an average value for the same observation in cases when these separate sources provided different values. This research constructed a database that consists of a compilation of data from the various

sources described above, and presented new tables, figures, and calculations derived from these data. The data included state-level statistics for fiscal effort, graduation rates, education spending per pupil, gross state product per capita, welfare spending, health spending, political party affiliation, union versus nonunion states and unemployment rates.

Method

In this study, panel data regression analysis was used to examine to what extent variations in the dependent variable of interest could be explained by variations in explanatory variables. There are several methods used to better understand the determinants of variation in a given variable, which vary depending on the time span and the number of observations in the sample. Cross sectional data analysis would help the researcher examine the relationship between dependent and independent variables at only one point in time (Olsen, 2004, p.7). Time series analysis would help examine changes in one subject over the course of time. Cochrane (1997) defines time series as a "...set of repeated observations of the same variable" (p.8). The panel data analysis used in this research examined the relationship between the variables in fifty states and Washington D.C. over time. Dougherty (2007) lists the reasons for increasing interests in panel data sets as follows:

> Their use [panel data sets] may offer a solution to the problem of bias caused by unobserved heterogeneity, a common problem in the fitting of models with cross-sectional data sets... it may be possible to exploit panel data sets to reveal dynamics that are difficult to detect with cross-sectional

data… [And] they often have very large numbers of observations (pp.408-409).

This study examined not only the relationship between unemployment and education expenditure but also the relationship between unemployment and other explanatory variables such as welfare spending, health spending, income per capita, gross state product, union vs. nonunion states, graduation rates, political party affiliation etc. This research gradually expounded the differences in results owing to different estimation methods. Initially, this study conducted a pooled OLS regression analysis. In this setting, the relationship between unemployment and a host of explanatory variables can be represented as:

$$(i) \qquad Y_{it} = \beta X_{it} + e_{it}$$

where Y_{it} denotes unemployment in state *i* at time *t* and X_{it} denotes a vector of explanatory variables as suggested by the existing literature, and e_{it} denotes the error term. The argument can be made, however, that explanatory variables affect unemployment after some time has elapsed, i.e. with a time lag, in which case we would add the five-year-lagged values of these variables:

$$(ii) \qquad Y_{it} = \beta X_{it} + \lambda L5.X_{it} + e_{it}$$

This research, however, uses a panel of employment and various explanatory variables data in 51 cross-sectional units over 25 years. In a panel data framework it is quite likely for state-level unemployment be correlated to state-specific unobserved characteristics, such the attitude of the population to job loss and job search, the general employment environment etc. The effect of these unobservable characteristics would not be accounted for by the equation above. The result would be an equation that suffers from

the omitted variables problem, and the estimates would be biased and unreliable, as they would come to contain an effect for which they are not responsible. The specification that would help account for the unobservable state characteristics would be:

$$Y_{it} = \beta X_{it} + c_i + e_{it}$$

where Y and X denote the same variables as in the first equation and c_i denotes the state-specific effects. This equation would be estimated by panel OLS. The subsequent issue that regards the estimation method is that of the choice between a fixed-effects and a random-effects estimation. The random-effects estimation required that the state-specific unobservable characteristics, c_i, be uncorrelated to the vector of explanatory variables. This is, admittedly, quite a strong assumption, as it is in fact quite likely for these unobservables, such attitudes and culture, to be related not only to unemployment, but to state expenditure levels in general and education expenditure in particular. If this assumption does not hold, the random effects estimators would be inconsistent. The fixed-effects estimation, however, does not impose such strong assumptions on the data. As such, it becomes the preferred estimator in cases where the state-specific effects are likely to be correlated with the right-side variables, as the author of this study believes is the case. A panel OLS with state fixed effects is econometrically equivalent to a pooled OLS regression with state categorical (dummy) variables, so we could indeed run the same regression described above as a pooled OLS with state dummies, i.e.:

$$Y_{it} = \beta X_{it} + D_i + e_{it}$$

Running a pooled OLS with state dummies has the added advantage of allowing for the addition of time dummies. Indeed, it is quite plausible for unemployment, while structurally different in each state, to vary across years. There could be particular years in

which unemployment increases or decreases in all states due to US-level business cycles or countercyclical federal expenditure. The year effect would then be captured by a year dummy, and the equation above would be amended as:

$$(iii) \qquad Y_{it} = \beta X_{it} + D_i + D_t + e_{it}$$

where D_t is a vector of categorical variables pertaining to each year t. The last specification would replace the values of explanatory variables from the same year in equation (iii) above with five-year-lagged values instead:

$$(iv) \qquad Y_{it} = \beta X_{it} + \lambda L5.X_{it} + D_i + D_t + e_{it}$$

One could try various specifications of the equation above, such as a specification with three-year lags or ten-year lags added, or even replace the same-year variables for one-year lagged variables.

Summary

The purpose of this empirical study was to evaluate the long-term effect of several measures of education expenditure on unemployment rates, while accounting for other variables. This research employed panel data regression analysis to see to what extent these measures of education expenditure have impact on unemployment rates while accounting for other variables as well. The final results were reached gradually through four specifications. In the first specification OLS regression was employed where state-level unobservable characteristics are not accounted for. In the second specification the OLS regression with five-year-lags of the explanatory variables was employed one where present level unemployment was regressed on the values of the explanatory variables from five years ago. In the third specification a regression with state and time level fixed effects was run. And, finally the study employed the regression with five-year lags and

state and time fixed-effects, which allowed addressing both reverse causality and state and time unobservable characteristics.

CHAPTER 4

RESULTS

Introduction

Chapter 4 presents statistical analysis that help the researcher answer the research question raised in this study: The research question for this study was:

- Is there a significant correlation between education and economy in terms of the impacts of investment in human capital through education spending per pupil and states' fiscal effort on unemployment while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending?

Regression Analyses

To evaluate the correlation between independent and control variables, this study employed four different specifications to find the actual effect of independent variables on the dependent variable. The dependent variable is unemployment. The control variables are: education spending per pupil, state fiscal effort, gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending. In terms of the significance of the results, a confidence level of 95% (significance at the 0.05 level) is generally used in education, athletics, and the social sciences. However, the confidence level of 90 percent could also be acceptable in social science (Djupe and Gilbert, 2003).

In the first specification OLS regression was employed where state-level unobservable characteristics are not accounted for.

Table 10

OLS Regression

Variables	Unemployment
Political Party Affiliation	-0.00134
	[-0.03]
Union vs. Nonunion	-0.25105***
	[-2.76]
Welfare	1.05551***
	[9.82]
Health	0.20365***
	[3.42]
Graduation Rate	-0.06562***
	[-8.81]
Fiscal Effort	-0.84847
	[-0.47]
GSP Per Capita	-0.00004***
	[-2.67]
Education Spending Per Pupil	0.00024***
	[4.11]
Constant	8.20250***
	[10.04]
Observations	969
R-squared	0.262

t-statistics in brackets
*** p<0.01, ** p<0.05, * <0.1

In the first specification where OLS regression is employed the coefficient of each of the 'Union vs. Nonunion,' 'Welfare,' 'Health Spending,' 'Graduation Rate,' 'Gross State Product Per Capita,' and 'Education Spending Per Pupil' variables is significant at the 0.01 level, which means that the probability of the effect of each of these variables on unemployment being accidental is only one percent. A one percent significance level is equivalent to a ninety nine percent confidence interval. For large samples (N=969), a t-value in the excess of 1.65 entails a significance level of at least 10 percent, a t-value in

the excess of 1.96 entails a significance of at least 5 percent, and a t-value in the excess of 2.6 entails a significance level of 1 percent. The significant and positive coefficient of the constant term means that the unemployment will exist even when we account for all the explanatory variables. The R-squared is representative of the degree of variation in unemployment that can be explained by the control variables. In this specification R-square value indicates that twenty-six percent of the variance in unemployment can be predicted from the control variables.

Table 11

OLS regression with five-year-lags of the explanatory variables

Variables	Unemployment
Political Party Affiliation	0.07543
	[1.48]
Union vs. Nonunion	0.01814
	[0.17]
Welfare	0.11433
	[0.93]
Health	0.59255***
	[7.63]
Graduation Rate	-0.04451***
	[-5.01]
Fiscal Effort	8.17485***
	[3.62]
GSP Per Capita	0.00014***
	[7.22]
Education Spending Per Pupil	-0.00010
	[-1.23]
Constant	0.63831
	[0.62]
Observations	714
R-squared	0.333

t-statistics in brackets

*** p<0.01, ** p<0.05, * p<0.1

In the second specification the OLS regression with five-year-lags of the explanatory variables is employed one where present level unemployment is regressed on the values of the explanatory variables from five years ago. In this specification, "Health Spending", Graduation Rate", "Gross State Product Per Capita", and "Fiscal Effort" are the only variables that show significant correlations in terms of their effects on unemployment. In other words, the coefficient of each of these variables is significant the 0.01 level, which means that the probability of the effect of each of these variables on unemployment being accidental is only one percent. A one percent significance level is equivalent to a ninety nine percent confidence interval. In this second specification, too, there is a large sample size (N=714), and a t-value in the excess of 1.65 entails a significance level of at least 10 percent, a t-value in the excess of 1.96 entails a significance of at least 5 percent, and a t-value in the excess of 2.6 entails a significance level of 1 percent. The R-squared is representative of the degree of variation in unemployment that can be explained by the control variables. In this specification it indicates that thirty-three percent of the variance in unemployment can be predicted from the control variables.

Table 12

Regression with state and time level fixed effects

Variables	Unemployment
Political Party Affiliation	-0.80092***
	[-7.52]
Union vs. Nonunion	1.47652***
	[7.79]
Welfare	0.71109***
	[8.21]

Table 12 (Continued)

Health	0.16502**
	[2.54]
Graduation Rate	-0.00032
	[-0.03]
Fiscal Effort	1.13386
	[1.10]
GSP Per Capita	-0.00004***
	[-3.33]
Education Spending Per Pupil	-0.00025***
	[-5.52]
Constant	7.03658***
	[5.96]
Observations	969
R-squared	0.838

t-statistics in brackets

*** p<0.01, ** p<0.05, * p<0.1

In the third specification a regression with state and time level fixed effects was employed. In this specification, the coefficient of each of the "Political Party Affiliation", "Union vs. Nonunion", "Welfare", "Gross State Product Per Capita", and "Education Spending Per Pupil" variables is significant the 0.01 level, which means that the probability of the effect of each of these variables on unemployment being accidental is only one percent. A one percent significance level is equivalent to a ninety nine percent confidence interval. The coefficient of "Health Spending" variable is significant at the 0.05 level, which means that the probability of the effect of this variable on unemployment being accidental is only five percent. A five percent significance level is equivalent to a ninety-five percent confidence interval. In this third specification there is a large sample size (N=969), and a t-value in the excess of 1.65 entails a significance level of at least 10 percent, a t-value in the excess of 1.96 entails a significance of at least 5 percent, and a t-value in the excess of 2.6 entails a significance level of 1 percent.

As seen in the first specification as well, the significant and positive coefficient of the constant term in this specification means that the unemployment will exist even when we account for all the explanatory variables. In this specification the R-square value indicates that almost eighty-four percent of the variance in unemployment can be predicted from the control variables.

Table 13

Regression with five-year lags and state and time fixed-effects

Variables	Unemployment
Political Party Affiliation	0.17713
	[1.34]
Union vs. Nonunion	1.52661***
	[6.80]
Welfare	0.10974
	[0.88]
Health	-0.17583*
	[-1.88]
Graduation Rate	-0.00563
	[-0.42]
Fiscal Effort	4.47025***
	[2.67]
GSP Per Capita	0.00005**
	[2.07]
Education Spending Per Pupil	-0.00024***
	[-2.67]
Constant	5.15451***
	[2.79]
Observations	714
R-squared	0.830

t-statistics in brackets
*** p<0.01, ** p<0.05, * p<0.1

The fourth specification is the regression with five-year lags and state and time fixed-effects, which allows addressing both reverse causality and state and time unobservable characteristics. In this fourth specification, the coefficient of each of the "Union vs. Nonunion", "Fiscal Effort", and "Education Spending Per Pupil" variables is significant at the 0.01 level which means that the probability of the effect of this variable on unemployment being accidental is only one percent. A one percent significance level is equivalent to a ninety nine percent confidence interval. The coefficient of "Gross State Product Per Capita" variable is significant at the 0.05 level, which means that the probability of the effect of this variable on unemployment being accidental is only five percent. A five percent significance level is equivalent to a ninety-five percent confidence interval. Finally, the coefficient of "Health Spending" is significant at the 0.10 level, which means that the probability of the effect of this variable on unemployment being accidental is only ten percent. A ten percent significance level is equivalent to a ninety percent confidence interval. In this fourth specification there is again a large sample size (N=969), and a t-value in the excess of 1.65 entails a significance level of at least 10 percent, a t-value in the excess of 1.96 entails a significance of at least 5 percent, and a t-value in the excess of 2.6 entails a significance level of 1 percent. As seen in the first and third specifications as well, the significant and positive coefficient of the constant term in this fourth specification means that the unemployment will exist even when we account for all the explanatory variables. In this specification the R-square value shows that eighty-three percent of the variance in unemployment can be predicted from the control variables. In the findings summary section there are further details explained to better understand the meanings of the results obtained in this section.

Findings Summary

When OLS regression is employed (where state-level unobservable characteristics are not accounted for), the degree of unionization, graduation rate, and state income level have a negative effect on the level of unemployment. However, welfare and health spending are positively correlated with the unemployment level, but in this case the causation is likely to run in opposite direction; i.e. as unemployment increases, so do welfare spending and health spending. Quite surprisingly, education spending per pupil, too, is positively correlated with unemployment, and this could also be explained by the reverse causality described above, as it is likely that states feel pressed to increase spending per pupil as unemployment increases.

What should help eliminating concerns about reverse causality discussed above is the OLS specification with five-year-lags of the explanatory variables, i.e. one where present level unemployment is regressed on the values of the explanatory variables from five years ago. In this specification the only variable that has a negative effect on unemployment is high school graduation rate. These results fall in line with the fact that the US economy has gradually become a knowledge-intensive economy, and in such an economy the only factor that helps reduce unemployment in the long run is graduation rate, which demonstrates the significance of investment in human capital through education. The literature also confirmed that those who have a high school diploma get a job faster and pay more tax dollars since they earn more than those without a high school diploma (Owings and Kaplan, 2006; Bureau of Labor Statistics, 2011).

When a regression with state and time level fixed effects is run, the variables that have a negative effect on unemployment are income per capita in a state, spending per

pupil, and the degree of republican leaning in a state. As far as the other variables are concerned, the negative effect of graduation rate becomes insignificant, which means that it is likely picked up by the state fixed effects. In other words, in the first specification the effect that can be attributable to the state unobservables was picked by other variables such as the graduation rate. Once we account for state level unobservables the significance of the other variables disappears. This would imply that once state-level unobservable characteristics are taken into account, graduation rate does not have an unemployment-reducing effect. Furthermore, the negative effect of the degree in unionization becomes positive, suggesting a similar pattern. However, it is still likely for the differences in explanatory variables, such as income per capita, to be affected by, or codetermined with the differences in the dependent variable. This makes it difficult to make strong statements about the direction of the causality between the dependent and the explanatory variables.

The last and the most complete specification is the regression with five-year lags and state and time fixed-effects, which allows addressing both reverse causality and state and time unobservable characteristics. In this specification the only variables that have negative effect on unemployment are per pupil spending and health spending. This indicates that, in the long term, the only way to effectively reduce unemployment is investment in improving the quality of human capital through investment in education and health. It is conceivable for a healthier and better educated workforce to be more flexible and resilient to shocks that lead to a reconfiguration of the economy and the production structure. Acquiring new skills or actively seeking to relocate one's job is made easier by better education and health, mental and physical.

The effect of unionization is positive, which is in line with existing economic wisdom that indicates that stronger unions contribute to a more rigid labor market. Employers would be enthusiastic to hire new employees since they would afford firing because of rigid union states' employment policies. The effect of fiscal effort is quite puzzling, as it is also positive. However, due to the relative nature of this variable, variation could quite likely be caused by changes in the denominator, i.e. income, so it is difficult to provide a satisfactory explanation for its effect. While some states show greater devotion to fund education by their higher rates of fiscal effort, their actual spending per pupil could be relatively lower than some other states. Statistics would not appreciate the devotion; rather, it would account for the actual amount spent for education when dealing with the correlations.

The positive effect of gross state product, on the other hand, could be attributable to business cycles. The higher income increases above trend, the more likely it is for the economy to be on the upswing of the business cycle, hence, the more likely it is for unemployment to increase five years later, as the business cycle goes into a downturn. The negative correlation between income and unemployment in the simultaneous specifications (I and II) corroborates this explanation.

Given the variance in results depending on the specification, it is worth elaborating on the differences between the latter and selecting the one that is most satisfactory from a methodological point of view. While the regressions with fixed effects account for unobservable traits related to states or time periods, regressions with five-year lags help address the issue of causality between the dependent and the explanatory variables. It is the view of this study that the issues of causality and that of unobservable

traits have to be addressed simultaneously; hence the choice of the regressions with five-year lags and state and year level fixed effects.

CHAPTER 5

DISCUSSION

Introduction

Chapter 1 started with an introduction that was followed by background and context that helps one make connection between education and the economy as regards the impact of the investment in human capital through education. This chapter included the presentation of the research purpose, research question, significance of the study, research design and sample, and data collection and sources. Chapter 2 included the literature review that showed to what extent the studies in the literature vary from one another in terms of their understanding of the impact of education on the economy. Chapter 3 presented the methodology that included the statement of the research problem, research purpose, research question, research design and sample, data collection and sources, method, and summary. Chapter 4 started with a presentation of the results that included an introduction, the results of regression analyses, and summary of the findings.

Methods Summary

This empirical study employed panel data regression analysis to examine to what extent variations in the dependent variable of interest could be explained by variations in explanatory variables. The study included a sample of America's 50 states and Washington D.C. The data used in this empirical study included gross state product per capita, education spending per pupil, fiscal effort, graduation rates, the degree of unionization, political party affiliation of each state, welfare spending, and health spending. This research gradually explored the differences in results owing to different estimation methods.

Initially, this study conducted a pooled OLS regression analysis where state-level unobservable characteristics were not accounted for. In this estimation method the issue of reserve causality was not accounted for either. Since state level unobservable characteristics and the issue of reverse causality were not accounted for, welfare and health spending showed a positive correlation with the unemployment level because the causation was likely to run in opposite direction; i.e. as unemployment increases, so do welfare spending and health spending. Education spending per pupil, too, showed a positive correlation with unemployment, and this could also be explained by the reverse causality, as it is likely that states feel pressed to increase spending per pupil as unemployment increases.

Second, the study conducted the OLS regression with five-year-lags of the explanatory variables where present level of unemployment was regressed on the values of the explanatory variables from five years ago. In this estimation method the OLS regression with five-year-lags of the explanatory variables was employed to eliminate the concerns about reverse causality discussed above. In this estimation method one could see how the present variations in the dependent variable could be predicted from the values of the explanatory variables from five years ago.

Third, the study employed a regression with state and time level fixed effects. In this estimation method state-level unobservable characteristics were accounted for. By employing a regression with state and time level fixed effects one was able to see the actual effect of the state-level unobservable characteristics. When we employed a regression with state and time level fixed effects, the effects of some variables became insignificant, which means that they were likely picked up by the state fixed effects.

Fourth and finally, the study conducted the regression with five-year lags and state and time fixed-effects, which allowed addressing both the issue of reverse causality and state and time unobservable characteristics. The final and the most complete estimation method aimed to find the actual effect of control variables on unemployment rate since it allowed both reverse causality and state and time unobservable characteristics.

Major Findings of Study

The purpose of this empirical study was to evaluate the long-term effect of several measures of education expenditure on unemployment rates, while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending. This research concluded with the final results through four separate specifications in order to examine the extent to which explanatory variables have impact on unemployment over a long time period by gradually introducing separate specifications.

In the first estimation method OLS regression was employed. This estimation method did not account for state-level unobservable characteristics and the issue of reverse causality. This estimation method showed that the states that require or allow collective bargaining have lower unemployment rates. In this estimation method the states with higher graduation rates and income level have lower unemployment rates, too. On the other hand, states with higher welfare and health spending have higher unemployment level since the causation is likely to run in opposite direction; i.e. as unemployment increases, so do welfare spending and health spending. The states with higher education spending per pupil have higher unemployment rates, too, because of the

reverse causality described above, as it is likely that states feel pressed to increase spending per pupil as unemployment increases.

In the second estimation method the study employed the OLS specification with five-year-lags of the explanatory variables. In this estimation method the present level unemployment is regressed on the values of the explanatory variables from five years ago. This estimation method showed that the states with higher graduation rates have lower unemployment rates. On the other hand, when we employed the OLS regression with five-year-lags of the explanatory variables to eliminate concerns about reverse causality the significance of the degree of unionization and welfare spending disappeared. The first estimation method, however, showed a significant correlation between unemployment and the degree of unionization and welfare spending.

In the third estimation method, a regression with state and time level fixed effects was run. In this estimation method the study showed that the states with higher income per capita and higher per pupil spending have lower unemployment. The degree of Republican Party leaning also shows a negative effect. In other words, this estimation method showed that the republican states have lower unemployment rates. In this estimation method, one could also see that once state-level unobservable characteristics are taken into account, some control variables no longer have an unemployment-reducing effect.

In the final estimation method the regression with five-year lags and state and time fixed-effects was employed. This estimation method allowed addressing both reverse causality and state and time unobservable characteristics. This estimation method showed that the states that have higher per pupil spending and health spending have

lower unemployment rates. In other words, this estimation method showed that the only way to effectively reduce unemployment in the long run is investment in improving the quality of human capital in both mentally and physically through education and health services. As previously mentioned, there is a great body of literature addressing the significance of the investment in human capital from various perspectives. This study confirmed that investment in human capital through education and health services play a significant role in economy. More specifically, this study showed that investment in human capital through education and health services could play a significant role in reducing unemployment rates.

Finally, the panel data analysis employed in this study confirmed that one could be ninety-nine percent confident that the relationship between per pupil spending and unemployment is not accidental. When state-level unobservable characteristics and the issue of reverse causality are taken into account the regression with five-year lags and state and time fixed-effects confirmed that the relationship between health spending and unemployment is not accidental with ninety percent confidence. In conclusion, one could be ninety-nine percent confident that investment in human capital through education has an unemployment-reducing effect. One could be ninety percent confident that investment in human capital through health spending has an unemployment-reducing effect.

Limitations

This research sought to evaluate the long-term effect of several measures of education expenditure on unemployment rates, while accounting for other variables such as gross state product per capita, graduation rates, the degree of unionization, political party affiliation, welfare spending, and health spending. However, this research did not

include all variables that could have impact on unemployment. In other words, this study could benefit from some additional variables to strengthen the generalizability of the results. For example, this research could benefit from the inclusion of the education level of the states as a variable in addition to the high school graduation rate that was already included as a variable in the study.

Racial and ethnic characteristics of the states could also be included as an explanatory variable to strengthen the reliability of this research. This study could benefit from data including crime rates as well. Several studies refer to the connection between education and crime and indicate that the highly educated individuals would receive higher income, pay more taxes, and be less likely to commit a crime and be incarcerated (Carroll & Atkins, 2009; Lochner, 2010; Owings & Kaplan, 2006; Lochner & Moretti, 2004; Gaviria, 2002). An entrepreneur would definitely consider a crime-free region when making investment decisions. A region that attracts more investment would likely suffer less from unemployment.

The characteristics of labor force by state would also be another variable that could be used in this research. As the U.S. economy gradually becomes a knowledge-intensive economy the characteristics of labor force gain much more significance in employers' decision making processes. The states where the majority of the labor force is constituted by unskilled and lowly educated individuals are more likely to suffer from unemployment than those who have transformed to a knowledge-based economy.

In this research a 25-year period was covered. However, this study could benefit from a further extended period to strengthen the validity. Finally, the recent economic recession might weaken the validity of the results since current economic indicators are

severely affected by the recession. One can see that unemployment rates in the United States were relatively stable until the great recession. As the Great Recession hit the economy the unemployment rates increased sharply. The recent recession affected other economic indicators as well. The impact of the Great Recession created so many outliers that might threat the validity of the research results.

Future Research

This study showed that most of the explanatory variables used in this research play a significant role in explaining variations in the dependent variable. However, for more generalizable and reliable results, this study could be further expanded by introducing other explanatory variables that might have a considerable impact on the dependent variable. Thus, future research could consider including variables such as state-level education levels, racial and ethnic composition, crime rates, and the characteristics of the labor force as new explanatory variables to achieve better results. A research that covers a longer period of time would also be an issue that could be addressed in the future. Finally, future research should also consider the outliers created by current recession while employing statistical methods.

Summary

There is a great body of literature addressing the significance of the impact of investment in human capital through education on the economy. While some studies show a significant impact, some others show little or no impact. The purpose of this study was to evaluate whether there was any significant impact of investment in human capital through education on economy particularly in terms of employment issues. Of the four separate specifications in this research the final and most complete specification showed

that investment in human capital through education and health spending have positive economic outcomes. More specifically, the variables that negatively affect unemployment are education spending per pupil and health spending. The final and most complete estimation method with the regression with five-year lags and state and time fixed-effects showed that the states with higher per pupil spending and health spending have lower unemployment rates. This result showed that the best way to effectively reduce unemployment is investment in improving the quality of human capital through funding education and better health services.

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PUBLICATIONS, CONFERENCENS, AND SEMINARS

Leadership in an International Context: Issues of Equity from a Turkish Perspective:

Legislation, Policies, and Practices, The American Educational Research Association (AERA) 2010 Annual Meeting, Denver Colorado, May 20, 2010

Equity and Homework: A Personal View from Turkey, The University Professional & Continuing Education Association (UCEA), Alexandria Virginia, November 16, 2007

Strategic Planning of a Focus Group for a Community Health Center in the Hampton Roads Area (Poster), The American Public Health Association (APHA), Norfolk Virginia, November 06, 2006

Interagency Challenges in Multinational Complex Contingency Operations-Humanitarian Assistance/Disaster Relief Exercise, National Defense University, Joint Forces Staff College, Norfolk Virginia, August 6, 2002

The European Union & NATO: Rivals or partners? Old Dominion University and Supreme Commander Atlantic, Norfolk Virginia, November 18, 2000

Interagency Challenges in Modern Complex Contingency Operations-Humanitarian Assistance/Disaster Relief Exercise, National Defense University, Joint Forces Staff College, Norfolk Virginia, May12, 2000

Interdisciplinary Perspectives on Regional and Global Issues, Old Dominion University Graduate Conference, Norfolk Virginia, April 14-15, 2000.

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